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Raleigh Studios

Traffic Impact Study

Park City, Utah

March 2012

UT12-336

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EXECUTIVE SUMMARY

This study addresses the traffic impacts associated with the proposed Raleigh Studios development in Park City, Utah. The 29-acre project site is located east of Kearns Blvd (SR-248) and west of US-40.

Included within the analyses for this study are the traffic operations and recommended mitigation measures for existing conditions and plus project conditions (conditions after development of the proposed project) at key intersections and roadways in the vicinity of the site. Future (2020) conditions are also analyzed.

TRAFFIC ANALYSIS

The following is an outline of the traffic analysis performed by Hales Engineering for the traffic conditions of this project.

Existing (2012) Background Conditions Analysis

Hales Engineering performed afternoon (4:00 to 6:00 p.m.) peak period traffic counts at the following intersections:

- Richardson Flat Road / Kearns Blvd (SR-248)
- Round Valley Drive / SR-248
- SB US-40 Ramps / SR-248
- NB US-40 Ramps / SR-248
- Project Accesses / SR-248

The counts were performed for a previous TIS in August 2009. The Richardson Flat Road and Round Valley Drive intersections were recounted on Thursday, March 1, 2012, and the remaining intersections were factored. Detailed count data are included in Appendix A.

As shown in Table ES-1, all study intersections have acceptable levels of service during the p.m. peak period. No significant queuing issues exist.

Project Conditions Analysis

The proposed land use for the development has been identified as follows:

- Entertainment / Studios:
  - 281,000 square feet building area
  - 614 employees
- Hotel:
  - 100 Rooms

The projected gross trip generation for the development is as follows:

- Daily Trips: 4,286
- a.m. peak Hour Trips: 434
- p.m. Peak Hour Trips: 449

Existing (2012) Plus Project Conditions Analysis

As shown in Table ES-1, the LOS does not change at any of the study intersections after completion of the proposed development. No significant queuing issues are anticipated.

Future (2020) Background Conditions Analysis

As shown in Table ES-1, all study intersections are anticipated to have acceptable levels of service in year 2020. However, significant eastbound queuing exists near the US-40 interchange. Mitigation measures are discussed below.

Future (2020) Plus Project Conditions Analysis

As shown in Table ES-1, the LOS is not anticipated to change significantly at any of the study intersections after completion of the proposed development with the exception of the North Truck Access. No significant queuing issues are anticipated.

TABLE ES-1
P.M. Peak Hour
Park City - Raleigh Studios TIS

Intersection	Existing 2012 Background	Existing 2012 Plus Project	Future 2020 Background	Future 2020 Background - Mitigated	Future 2020 Plus Project
Description	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])
Richardson Flat Road / SR-248	**WB / C (18.3)**	**WB / D (26.7)**	**C (23.0)**	**C (22.4)**	**C (26.4)**
South Access / SR-248[2]	-	**WB / A (9.6)**	-	-	**WB / D (26.2)**
Round Valley Drive / SR-248	**A (7.5)**	**B (13.6)**	**B (13.3)**	**B (14.5)**	**D (42.6)**
North Truck Access / SR-248[2]	-	**WB / B (14.2)**	-	-	**WB / E (42.3)**
SB US-40 Ramps / SR-248	**B (14.6)**	**B (15.6)**	**C (23.8)**	**B (17.4)**	**B (17.5)**
NB US-40 Ramps / SR-248	**B (14.0)**	**B (15.0)**	**C (29.8)**	**C (22.5)**	**C (23.3)**

1. Intersection LOS and delay (seconds/vehicle) values represent the overall intersection average for signalized and all-way stop controlled intersections and the worst approach for all other unsignalized intersections.
2. This intersection is a project access and was only analyzed in "plus project" scenarios.

Source: Hales Engineering, March 2012

RECOMMENDATIONS

The following mitigation measures are recommended:

Existing (2012) Background Conditions Analysis

No mitigation measures are recommended.

Existing (2012) Plus Project Conditions Analysis

No mitigation measures are recommended.

A northbound to eastbound right-turn deceleration lane and turn pocket as well as a southbound to eastbound left-turn deceleration lane and turn pocket will be required at the Main Access. No other auxiliary lanes are required per UDOT standards.

Future (2020) Background Conditions Analysis

The Future 2020 Conditions analysis includes SR-248 being widened to a five lane cross section south and west of the existing five-lane cross section. A signal is also assumed at Richardson Flat Road as well as other minor intersection improvements discussed in the main body of the report.

Hales Engineering also recommends the following:

SR-248 / US-40 NB Ramps:

- Provide dual eastbound to northbound left-turn lanes
- Change phasing for this movement to protected only phasing.

Future (2020) Plus Project Conditions Analysis

Due to the nature of the North Truck Access being used on a limited basis and being controlled by a guard house and a gate, it will be easy to restrict movements out of this access. It is anticipated that the access will be used in the early morning hours as filming vehicles leave the site at between 5:00 and 6:00 am for the majority of these trips. Due to the limited nature of the vehicles using this access, Hales Engineering recommends that no acceleration lane be provided and that vehicles exiting this site be required to stop and find a gap in the traffic stream created by the upstream traffic signal at Round Valley Drive or wait for a gap in the traffic stream.

Queuing Data

There are no significant queuing issues for either the existing or existing plus project conditions analyses; however, the future year 2020 projections show significant eastbound queuing near the US-40 interchange due to the heavy left-turn movement from eastbound SR-248 to northbound US-40. The queuing extends back several hundred feet past the southbound ramps. This can be mitigated by adding dual left-turn lanes and adjusting the traffic signal timing; these improvements lower the 95th percentile queuing to 325-feet, well within the queuing area between the NB and SB ramps. The queuing data can be found in Appendix D.

SUMMARY OF KEY FINDINGS/RECOMMENDATIONS

The following is a summary of key findings and recommendations:

- Traffic currently flows well and at acceptable levels of service within the study area during the p.m. peak hour.
- The project will add approximately 450 p.m. peak hour trips to the roadway network.
- All study intersections are anticipated to operate within acceptable levels of service with the addition of the proposed project traffic.
- Right-turn and left-turn ingress auxiliary lanes are required at the Main Access. No other auxiliary lanes are required per UDOT standards.
- Future travel demand for the corridor was calculated based on historical growth as well as anticipated growth from several nearby developments.
- Future roadway improvements for the corridor were obtained from the *SR-248 Corridor Plan* (H. W. Lochner, March 2009). These improvements include a five-lane section southwest of Round Valley Drive as well as a traffic signal at Richardson Flat Road.
- Dual left-turn lanes and signal phasing changes will be required for the eastbound to northbound US-40 on-ramp by year 2020 even without the proposed project.
- All project access will operate well to year 2020 with the exception of the North Truck Access which will operate at LOS E.
- Parking for this site has been reviewed based on a mixed use and time of day basis for this project and it is recommended that 1,100 stalls be available on-site and that overflow parking for filming days can be completed from the Richardson Flats Park and Ride lot.

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I. INTRODUCTION

A. Purpose

This study addresses the traffic impacts associated with the proposed Raleigh Studios development in Park City, Utah. The 29-acre project site is located east of Kearns Blvd (SR-248) and west of US-40. Figure 1 shows a vicinity map of the proposed development.

Included within the analyses for this study are the traffic operations and recommended mitigation measures for existing conditions and plus project conditions (conditions after development of the proposed project) at key intersections and roadways in the vicinity of the site. Future (2020) conditions are also analyzed.

Figure 1 Vicinity map showing the project location in Park City, Utah.

B. Scope

The study area was defined based on conversations with UDOT. This study was scoped to evaluate the traffic operational performance impacts of the project on the following intersections:

- Richardson Flat Road / Kearns Blvd (SR-248)
- Round Valley Drive / SR-248
- SB US-40 Ramps / SR-248
- NB US-40 Ramps / SR-248
- Project Accesses / SR-248

C. Analysis Methodology

Level of service (LOS) is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. Table 1 provides a brief description of each LOS letter designation and an accompanying average delay per vehicle for both signalized and unsignalized intersections.

The Highway Capacity Manual 2000 (HCM 2010) methodology was used in this study to remain consistent with "state-of-the-practice" professional standards. This methodology has different quantitative evaluations for signalized and unsignalized intersections. For signalized and all-way stop intersections, the LOS is provided for the overall intersection (weighted average of all approach delays). For all other unsignalized intersections LOS is reported based on the worst approach. Hales Engineering has also calculated overall delay values for unsignalized intersections, which provides additional information and represents the overall intersection conditions rather than just the worst approach.

D. Level of Service Standards

For the purposes of this study, a minimum overall intersection performance for each of the study intersections was set at LOS D. However, if LOS E or F conditions exist, an explanation and/or mitigation measures will be presented. An LOS D threshold is consistent with "state-of-the-practice" traffic engineering principles for urbanized areas.

Table 1 Level of Service Descriptions

Level of Service	Description of Traffic Conditions	Average Delay (seconds/vehicle)
Signalized Intersections		**Overall Intersection**
A	Extremely favorable progression and a very low level of control delay. Individual users are virtually unaffected by others in the traffic stream.	0 ≤ 10.0
B	Good progression and a low level of control delay. The presence of other users in the traffic stream becomes noticeable.	> 10.0 and ≤ 20.0
C	Fair progression and a moderate level of control delay. The operation of individual users becomes somewhat affected by interactions with others in the traffic stream.	>20.0 and ≤ 35.0
D	Marginal progression with relatively high levels of control delay. Operating conditions are noticeably more constrained.	> 35.0 and ≤ 55.0
E	Poor progression with unacceptably high levels of control delay. Operating conditions are at or near capacity.	> 55.0 and ≤ 80.0
F	Unacceptable progression with forced or breakdown operating conditions.	> 80.0
Unsignalized Intersections		**Worst Approach**
A	Free Flow / Insignificant Delay	0 ≤ 10.0
B	Stable Operations / Minimum Delays	>10.0 and ≤ 15.0
C	Stable Operations / Acceptable Delays	>15.0 and ≤ 25.0
D	Approaching Unstable Flows / Tolerable Delays	>25.0 and ≤ 35.0
E	Unstable Operations / Significant Delays Can Occur	>35.0 and ≤ 50.0
F	Forced Flows / Unpredictable Flows / Excessive Delays Occur	> 50.0

Source: Hales Engineering Descriptions, based on Highway Capacity Manual, 2010 Methodology (Transportation Research Board, 2010)

II. EXISTING (2012) BACKGROUND CONDITIONS

A. Purpose

The purpose of the existing (2012) background analysis is to study the intersections and roadways during the peak travel periods of the day with background traffic and geometric conditions. Through this analysis, background traffic operational deficiencies can be identified and potential mitigation measures recommended. This analysis will provide a baseline condition that may be compared to the build conditions to identify the impacts of the development.

B. Roadway System

The primary roadway that will provide access to the project site is described below:

Kearns Blvd. (SR-248) – is a state-maintained roadway (classified by UDOT access management standards as a "Regional Rural" facility, or access category 4 roadway) that would provide direct access to the proposed site. SR-248 is composed of a three-lane cross section (one lane in each direction of travel and a center two-way left-turn lane (TWLTL) median) adjacent to the southern portion of the project and a five-lane cross section (two lanes in each direction of travel, and a TWLTL median) adjacent to the northern portion of the project. As identified and controlled by UDOT, a "Regional Rural" access classification identifies minimum signalized intersection spacing of one-half mile (2,640 feet), minimum street spacing of 660 feet, and minimum access spacing of 500 feet. To the northeast of Round Valley Drive and through the interchange area, SR-248 is classified as a "System Priority Urban" roadway (access category 3) with minimum signalized intersection spacing of one-half mile and no unsignalized access permitted. The posted speed limit on SR-248 south of Round valley Drive is 50 mph while the posted speed limit northeast of Round Valley Drive is 45 mph.

The Round Valley Drive / SR-248 intersection is currently signalized as are both the north- and southbound ramp intersections. The three signals use SCATS® software which automatically adjusts the cycle length and splits throughout the day. Based on recent data obtained from the UDOT TOC, Hales Engineering estimated the typical weekday p.m. peak hour cycle length to vary between 75 and 95 seconds. Typical splits were also obtained from historical data. Minimum green times, change interval, and clearance times were obtained from UDOT.

The Richardson Flat Road / SR-248 intersection has been identified as a future signalized intersection. In the future (2020) portion of this analysis, Hales Engineering assumed this signal would also be part of the SCATS® system.

C. Traffic Volumes

For a previous traffic impact study in this area, Hales Engineering performed afternoon (4:00 to 6:00 p.m.) peak period traffic counts at the following intersections:

- Richardson Flat Road / Kearns Blvd (SR-248)
- Round Valley Drive / SR-248
- SB US-40 Ramps / SR-248
- NB US-40 Ramps / SR-248

The counts were performed on Wednesday, August 12, 2009. The afternoon peak hour was determined to be between the hours of 4:45 and 5:45 p.m. Detailed count data are included in Appendix A. The counts were seasonally adjusted based on data from a UDOT automatic traffic recorder (ATR) adjacent to the project site.

Hales Engineering also conducted two additional counts in order to determine what adjustments, if any, are required for the older turning movement count data. Additional counts were conducted at:

- Richardson Flat Road / Kearns Blvd (SR-248)
- Round Valley Drive / SR-248

The counts were performed on Thursday, March 1, 2012. The afternoon peak hour was again determined to be between the hours of 4:45 and 5:45 p.m. Although daily traffic levels have remained fairly steady state-wide over the last three years, the Round Valley Drive / SR-248 intersection saw a 33 percent increase in traffic levels, even after accounting for seasonal variation. The USSA facility on Round Valley Drive is likely a strong factor for the increase in traffic as the recent counts were conducted in March while the 2009 counts were conducted in August.

Figure 2 shows the existing p.m. peak hour volume as well as intersection geometry at the study intersections based on the 33 percent increase in traffic between August 2009 and March 2012.

D. Level of Service Analysis

Using Synchro/SimTraffic, which follow the Highway Capacity Manual (HCM) 2010 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 2 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. These results serve as a baseline condition for the impact analysis of the proposed development during existing (2012) conditions. As shown in Table 2, all intersections have acceptable levels of service during the p.m. peak hour.

Table 2 Existing (2012) Background p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]
Richardson Flat Road / SR-248	EB/WB Stop	WB	18.3	C	-	-
Round Valley Drive / SR-248	Signal	-	-	-	7.5	A
SB US-40 Ramps / SR-248	Signal	-	-	-	14.6	B
NB US-40 Ramps / SR-248	Signal	-	-	-	14.0	B

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, March 2012

E. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. The queue reports can be found in Appendix D. No significant queuing was observed at any of the study intersections.

F. Mitigation Measures

No mitigation measures are required.


270
170
460
720
40
220
370
210
0
350
40
810
470
SR-248
SB Ramps
NB Ramps
Round Valley Drive
70
490
180
70
40
1100
SR-248
0
555
5
10
5
0
0
0
0
1130
10
Richardson

III. PROJECT CONDITIONS

A. Purpose

The project conditions analysis explains the type and intensity of development. This provides the basis for trip generation, distribution, and assignment of project trips to the surrounding study intersections defined in the Introduction.

B. Project Description

This study addresses the traffic impacts associated with the proposed Raleigh Studios development in Park City, Utah. The 29-acre project site is located east of Kearns Blvd (SR-248) and west of US-40. A site plan for the proposed development has been included in Appendix C.

The proposed land use for the development has been identified as follows:

- Entertainment / Studios:
  - 281,000 square feet building area
  - 614 employees
- Hotel:
  - 100 Rooms

C. Trip Generation

Trip generation for the development was calculated using rates published in the ITE *Trip Generation (8th Edition, 2008)*. Trip Generation for the proposed project is included in Table 3. While there are a lot of data for hotel sites, there is no published data specifically for film studios. The studios/entertainment portion of the land use is a mix of office space, small-scale retail and restaurants, studio space, storage space, screening rooms, and other support uses. Several land use categories in *ITE Trip Generation* have similar rates as a function of employees. Most office and industrial uses range between 0.38 and 0.59 p.m. peak hour trips per employee. On a square foot basis, p.m. peak hour rates tend to be less than one trip per hour per 1,000 square feet for less intense uses such as manufacturing and industrial, and closer to 1.5 trips per hour per 1,000 square feet of more intense uses such as office. Hales Engineering chose the Business Park land use (ITE Land Use Code 770) as it encompasses a mix of office, industrial, and support uses.

Some internal capture will occur between the hotel uses and the entertainment and studio uses. However, to remain conservative, and because of the fairly low trip generation rate for the hotel,

no internal capture reduction was taken. The Business Park land use in *ITE Trip Generation* already accounts for internal capture within those uses.

Table 3
Park City - Raleigh Studios TIS
Trip Generation

Daily Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Total Daily Trips
Hotel (310)	100	Rooms	522	50%	50%	261	261	**522**
Business Park (770)	280.659	1,000 Sq. Ft. GFA	3,764	50%	50%	1,882	1,882	**3,764**
Project Total Daily Trips						**2,143**	**2,143**	**4,286**
a.m. Peak Hour Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total a.m. Trips**
Hotel (310)	100	Rooms	41	61%	39%	25	16	**41**
Business Park (770)	280.659	1,000 Sq. Ft. GFA	393	84%	16%	330	63	**393**
Project Total a.m. Peak Hour Trips						**355**	**79**	**434**
p.m. Peak Hour Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total p.m. Trips**
Hotel (310)	100	Rooms	59	53%	47%	31	28	**59**
Business Park (770)	280.659	1,000 Sq. Ft. GFA	390	23%	77%	90	300	**390**
Project Total p.m. Peak Hour Trips						**121**	**328**	**449**
Saturday Daily Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat. Daily Trips**
Hotel (310)	100	Rooms	667	50%	50%	334	334	**667**
Business Park (770)	280.659	1,000 Sq. Ft. GFA	749	50%	50%	375	375	**749**
Project Total Saturday Trips						**708**	**708**	**1,417**

1. Land Use Code from the Institute of Transportation Engineers - 8th Edition Trip Generation Manual (ITE Manual)

SOURCE: Hales Engineering, March 2012

D. Trip Distribution and Assignment

Project traffic is assigned to the roadway network based on the type of trip and the proximity of project access points to major streets, high population densities, and regional trip attractions. Existing travel patterns observed during data collection also provide helpful guidance to establishing these distribution percentages, especially in close proximity to the site. The resulting distribution of project generated trips is as follows:

To/From Project Site:

- 50% West (SR-248)
- 30% North (US-40)
- 15% South (US-40)
- 5% East (SR-248)

These trip distribution assumptions were used to assign the p.m. peak hour generated traffic at the study intersections to create trip assignment for the proposed development. Trip assignment is shown in Figure 3 for the p.m. peak hour.

E. Access

The proposed access for the site will be gained at the following locations (see also site plan in Appendix C):

SR-248:

- South Access: Proposed full access located approximately 700 feet south of Round Valley Drive and 1,400 feet north of Richardson Flat Road.
- Main Access: Full, signalized access located directly across from Round Valley Drive.
- North Truck Access: Egress, right-turn only access located approximately 550 feet north of Round Valley Drive and approximately 800 feet south of the southbound US-40 ramps.

No cross access is proposed to the south. Cross access to the east is not feasible due to US-40. The South Access and Main Access appear to meet UDOT access spacing guidelines. The North Truck Access does not meet access spacing guidelines and is located within a "No Access (NA) Line."

F. Auxiliary Lane Requirements

Based on Administrative Rule R930-6, the following auxiliary lanes are required for access onto an Access Category 4 roadway:

Right-turn Deceleration Lane:

- Required when the projected peak hour right-turn ingress volume is greater than 25 vph. As shown in Figure 3, this peak hour volume is not met for the South Access but is met for the Main Access. Therefore, a right-turn deceleration lane is recommended at the Main Access.

Left-turn Deceleration Lane:

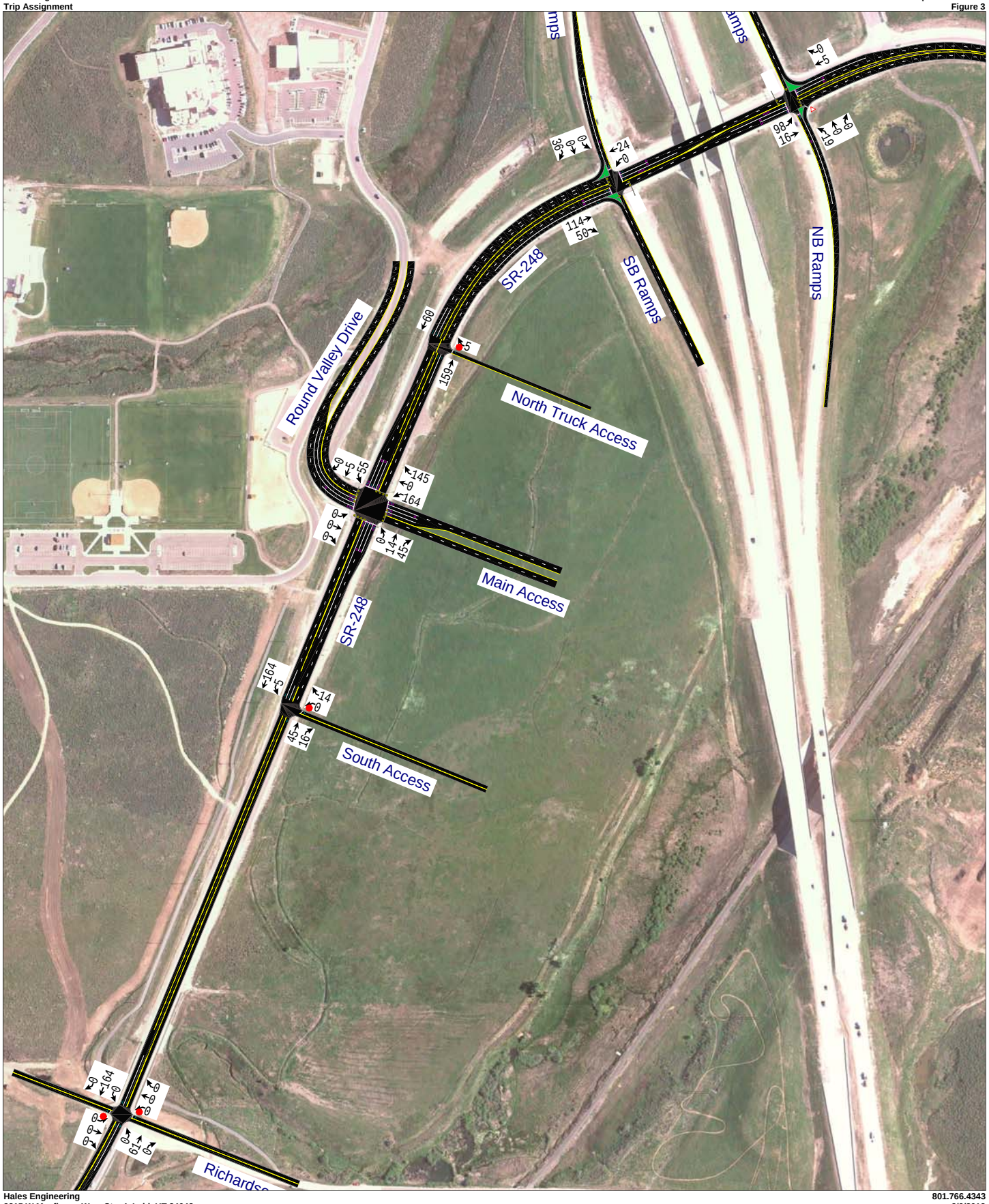
- Required when the projected peak hour left-turn ingress volume is greater than 10 vph. As shown in Figure 3, this peak hour volume is not met for the South Access but is met for the Main Access. A left-turn pocket is required for the Main Access, and the existing TWLTL will provide left-turn deceleration and storage for the South Access.

Right-turn Acceleration Lane:

- Required when the projected peak hour right turn egress volume is greater than 50 vph. As shown in Figure 3, this peak hour volume is not met for the South Access. The Main Access is signalized, and therefore does not need an acceleration lane. The North Truck Access also does not meet the threshold for a right-turn acceleration lane.

Left-turn Acceleration Lane:

- A left-turn acceleration lane is typically not required if the speed limit is less than 45 mph, the intersection is signalized, or if the acceleration lane will interfere with the next downstream deceleration lane. Because the Main Access is signalized, no left-turn acceleration lane is required.


Round Valley Drive
SR-248
SB Ramps
NB Ramps
North Truck Access
Main Access
South Access
SR-248

IV. EXISTING (2012) PLUS PROJECT CONDITIONS

A. Purpose

This section of the report examines the traffic impacts of the proposed project at each of the study intersections. The net trips generated by the proposed development were combined with the existing background traffic volumes to create the existing plus project conditions. This scenario provides valuable insight into the potential impacts of the proposed project on background traffic conditions.

B. Traffic Volumes

Project trips were assigned to the study intersections based on the trip distribution percentages discussed in Chapter III and permitted intersection turning movements.

The existing (2012) plus project p.m. peak hour volumes were generated for the study intersections and are shown in Figure 4.

C. Level of Service Analysis

Using Synchro/SimTraffic, which follow the Highway Capacity Manual (HCM) 2010 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 4 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. As shown in Table 4, all study intersections continue to have excellent levels of service with the proposed project traffic added.

D. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. The queue reports can be found in Appendix D. Queue lengths do not significantly change with the addition of project traffic. The 95th percentile queue length for the southbound to eastbound left-turn ingress movement at the South Access is less than 20 feet long. Therefore, this proposed access should not affect the main flow of traffic on SR-248.

Table 4 Existing (2012) Plus Project p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]
Richardson Flat Road / SR-248	EB/WB Stop	WB	26.7	D	-	-
South Project Access / SR-248	WB Stop	WB	9.6	A	-	-
Round Valley Drive / SR-248	Signal	-	-	-	13.6	B
North Truck Egress Access / SR-248	WB Stop	WB	14.2	B	-	-
SB US-40 Ramps / SR-248	Signal	-	-	-	15.6	B
NB US-40 Ramps / SR-248	Signal	-	-	-	15.0	B

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, March 2012

E. Mitigation Measures

No mitigation measures are recommended.


SR-248
SB Ramps
NB Ramps
Round Valley Drive
North Truck Access
Main Access
South Access
Richardson Flat
620
5
1439
70
495
55
145
0
164
180
0
70
40
1114
45
724
5
14
1185
16
0
719
5
10
0
5
0
0
0
0
1191
10
924
520
370
0
246
374
40
270
175
558
736
0
239
40

V. FUTURE (2020) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future (2020) background analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions. Through this analysis, future background traffic operational deficiencies can be identified and potential mitigation measures recommended.

B. Traffic Volumes

Hales Engineering conducted a thorough future growth analysis for the original traffic impact study for the MIDA property in August 2009. Traffic volumes for the future year 2020 were projected by analyzing historical trends in traffic on SR-248 obtained from UDOT as well as projections from previous traffic studies. According to historical traffic data, the ADT on SR-248 had grown by approximately 3.6 percent per year 1996 and 2009. Assuming a 4 percent growth rate, the ADT on SR-248 would be approximately 20,000 to 21,000 vehicles per day by year 2020. In addition to the assumed background growth on SR-248, Hales Engineering also obtained traffic estimates for other proposed developments in the vicinity of SR-248 / US-40 interchange. Those developments include the following:

- IHC Campus (West of SR-248) including hospital, medical offices, USSA facilities, and recreation facilities
- Park City Heights (East of SR-248 and south of Richardson Flat Road)
- IHC attainable housing (East of SR-248)
- Park City Mines attainable housing (East of SR-248)
- Richardson Flats (East of US-40) – 750 parking stalls

A summary of trip generation for each of these projects can be found in the August 2009 TIS. In addition to the added development, Hales Engineering also assumed that some traffic heading between the Browns Park area (along SR-248 east of US-40) and Park City will utilize Richardson Flat Road as a “cut-through” route.

Future 2020 p.m. peak hour turning movement volumes were calculated using NCHRP 255 methodologies. These volumes are shown in Figure 5.

C. Background Geometric Changes

Some background changes were assumed to have occurred along SR-248 by the year 2020. These changes include the following:

SR-248:

- According to the *SR-248 Corridor Plan* (H. W. Lochner, March 2009), the preferred alternative for SR-248 between Park City and Richardson Flat Road is a four-lane cross section with one general purpose lane and one high occupancy vehicle (HOV) lane in each direction of travel as well as bike lanes in both directions. Hales Engineering assumed that the HOV lanes on SR-248 would end to the south and west of the SR-248 / Richardson Flat Road intersection. Between Richardson Flat Road and US-40, SR-248 would be a five-lane cross section with two general purpose lanes in each direction of travel and a center TWLTL.

Richardson Flat Road / SR-248:

- Signalize intersection of SR-248 and Richardson Flat Road and coordinate with traffic signals to the northeast.
- Add a 200-foot northbound right-turn lane (northbound/eastbound SR-248 to eastbound Richardson Flat Road)
- Add a 200-foot westbound left-turn lane (westbound Richardson Flat Road to southbound/westbound SR-248)

D. Level of Service Analysis

Using Synchro/SimTraffic, which follow the Highway Capacity Manual (HCM) 2010 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 5 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. These results serve as a baseline condition for the impact analysis of the proposed development for future (2020) conditions. As shown in Table 5, all of the study intersections have acceptable levels of service for the p.m. peak hour.

Table 5 Future (2020) Background p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]
Richardson Flat Road / SR-248	Signal	-	-	-	23.0	C
Round Valley Drive / SR-248	Signal	-	-	-	13.3	B
SB US-40 Ramps / SR-248	Signal	-	-	-	23.8	C
NB US-40 Ramps / SR-248	Signal	-	-	-	29.8	C

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, March 2012

E. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. The queue reports can be found in Appendix D. The model shows significant eastbound queuing near the US-40 interchange due to the heavy left-turn movement from eastbound SR-248 to northbound US-40. The queuing extends back several hundred feet past the southbound ramps.

F. Mitigation Measures

Hales Engineering recommends the following:

SR-248 / US-40 NB Ramps:

- Provide dual eastbound to northbound left-turn lanes
- Change phasing for this movement to protected only phasing

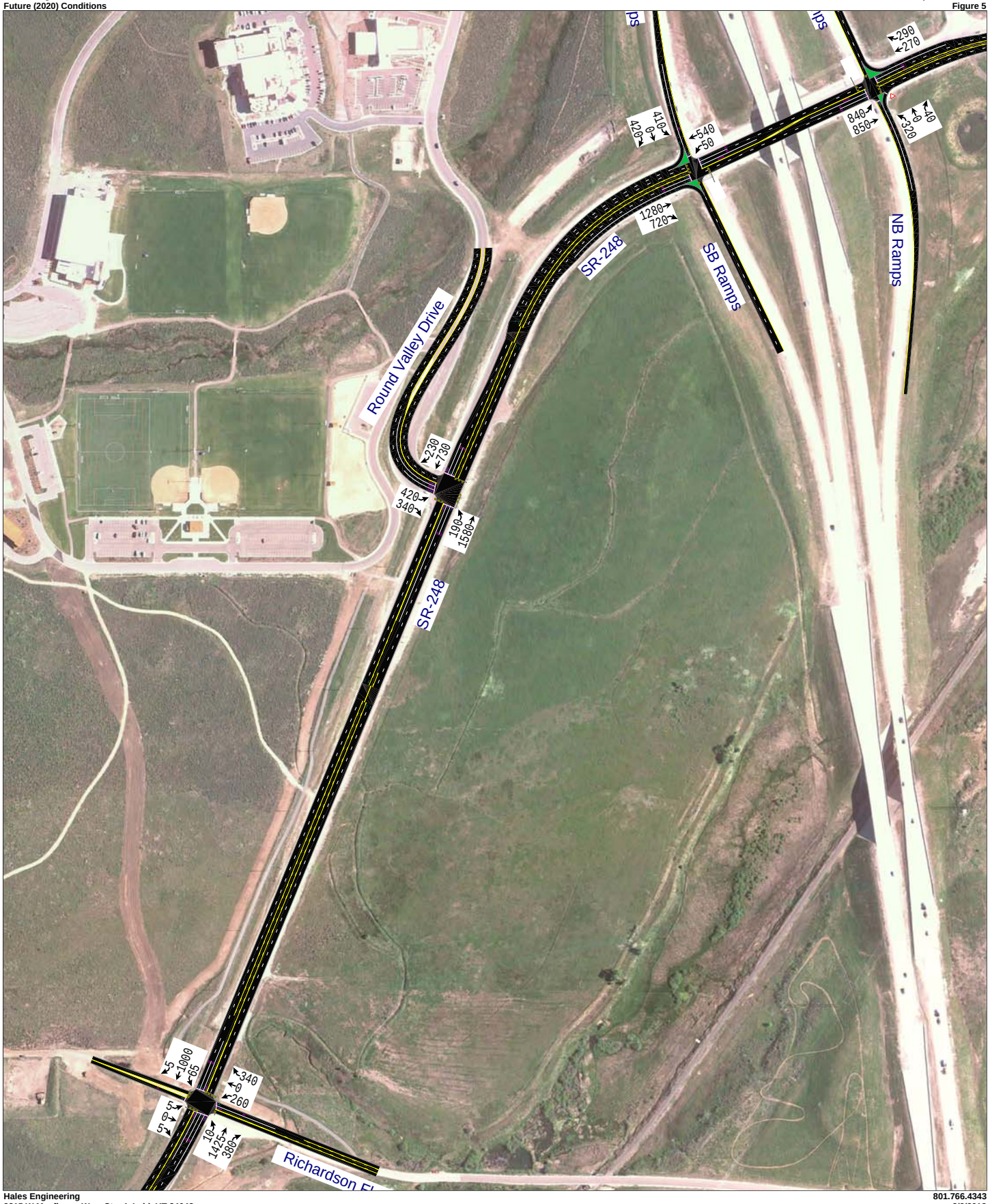
Table 6 shows the analysis results after implementing the mitigation measures. As shown in Table 6, the LOS at each study intersection continues to be at acceptable levels. Queue lengths are significantly improved after implementing the mitigation measures.

Table 6 Future (2020) Background p.m. Peak Hour Level of Service – Mitigated

Intersection		Worst Approach			Overall Intersection	
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]
Richardson Flat Road / SR-248	Signal	-	-	-	22.4	C
Round Valley Drive / SR-248	Signal	-	-	-	14.5	B
SB US-40 Ramps / SR-248	Signal	-	-	-	17.4	B
NB US-40 Ramps / SR-248	Signal	-	-	-	22.5	C

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, March 2012


Round Valley Drive
SR-248
SB Ramps
NB Ramps
SR-248
Richardson Fl
290
270
410
420
0
540
50
840
850
0
320
40
1280
720
230
730
420
340
190
1580
5
1000
65
340
0
260
5
0
5
10
1425
390

VI. FUTURE (2020) PLUS PROJECT CONDITIONS

A. Purpose

This section of the report examines the traffic impacts of the proposed project at each of the study intersections during future 2020 conditions. The trips generated by the proposed development were combined with the future 2020 background traffic volumes to create the future plus project conditions. The future plus project scenario evaluates the impacts of the project traffic on the surrounding roadway network assuming build-out as discussed in Chapter III of this report. This scenario provides valuable insight into the potential impacts of the proposed project on future background traffic conditions.

B. Traffic Volumes

Trips were assigned to the study intersections based on the trip distribution percentages discussed in Chapter III and permitted intersection turning movements.

The future (2020) plus project p.m. peak hour volumes were generated for the study intersections and are shown in Figure 6.

C. Level of Service Analysis

Using the Synchro/SimTraffic Software which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the future 2020 plus project p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 7 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used for the analysis to provide a statistical evaluation of the interaction between the intersections. As shown in Table 7, all of the study intersections experience acceptable levels of delay during the p.m. peak hour with the exception of the North Truck Access which has an LOS E for the minor approach.

D. Queuing Analysis

Hales Engineering calculated the 95th percentile queue lengths for each of the study intersections. The queue reports can be found in Appendix D. No significant queuing was observed. The 95th percentile queue length for the southbound to eastbound left-turn ingress movement at the proposed South Access is approximately 20 feet (one car length). Therefore, this access should not affect flow of southbound traffic on SR-248.

E. Mitigation Measures

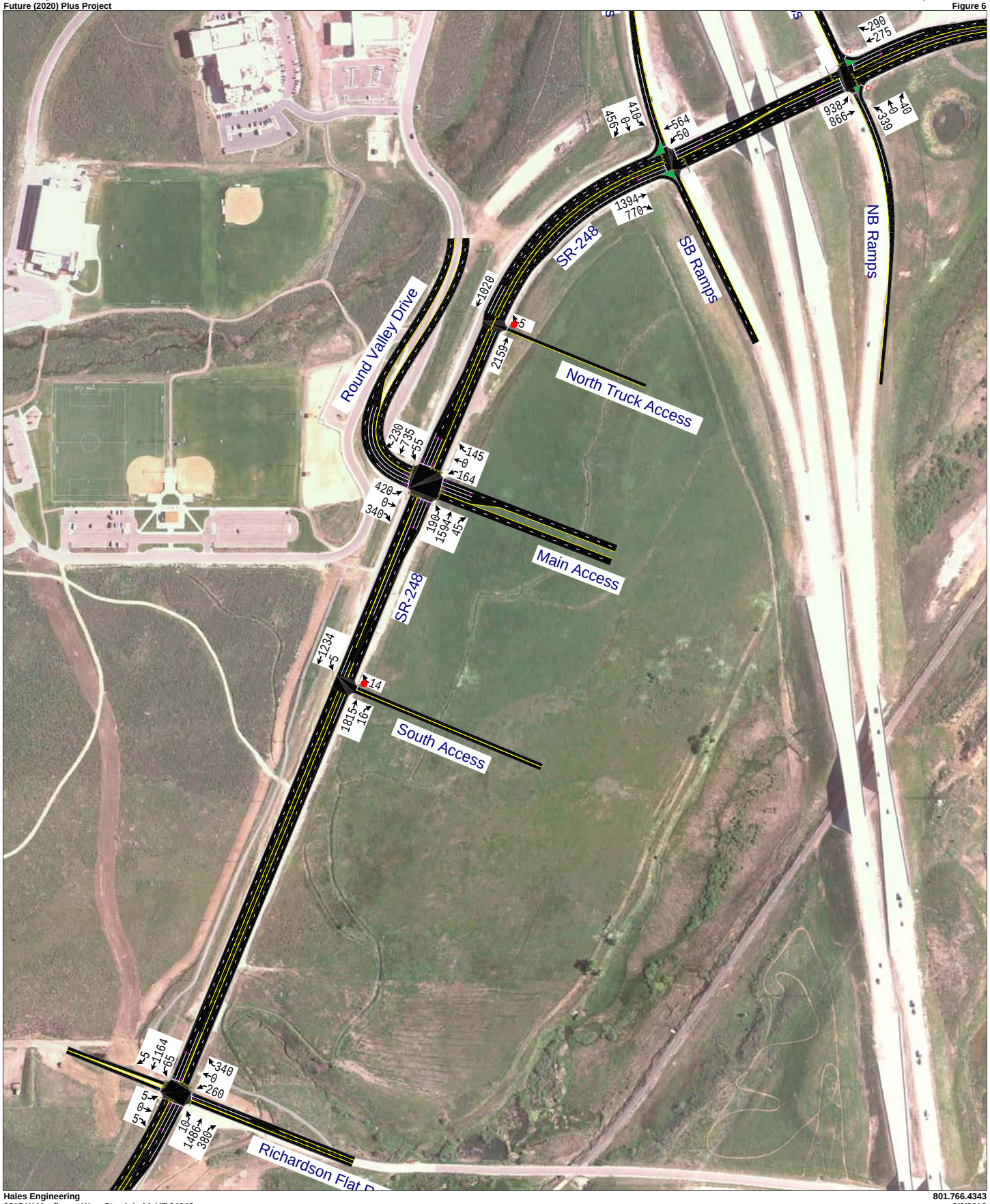
Due to the nature of the North Truck Access being used on a limited basis and being controlled by a guard house and a gate, it will be easy to restrict movements out of this access. It is anticipated that the access will be used in the early morning hours as filming vehicles leave the site at between 5:00 and 6:00 am for the majority of these trips. Due to the limited nature of the vehicles using this access, Hales Engineering recommends that no acceleration lane be provided and that vehicles exiting this site be required to stop and find a gap in the traffic stream created by the upstream traffic signal at Round Valley Drive or wait for a gap in the traffic stream.

Table 7 Future (2020) Plus Project p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]
Richardson Flat Road / SR-248	Signal	-	-	-	26.4	C
South Project Access / SR-248	WB Stop	WB	26.2	D	-	-
Round Valley Drive / SR-248	Signal	-	-	-	42.6	D
North Truck Egress Access / SR-248	WB Stop	WB	42.3	E	-	-
SB US-40 Ramps / SR-248	Signal	-	-	-	17.5	B
NB US-40 Ramps / SR-248	Signal	-	-	-	23.3	C

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, March 2012


290
275
40
339
938
866
410
456
0
564
50
1394
770
SR-248
SB Ramps
NB Ramps
Round Valley Drive
1020
5
2159
North Truck Access
230
735
55
145
0
164
420
0
340
190
1594
45
Main Access
SR-248
1234
5
14
1815
16
South Access
5
1164
65
340
0
260
5
0
5
10
1485
380
Richardson Flat R

HALES ENGINEERING
innovative transportation solutions

APPENDIX A

Turning Movement Counts

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

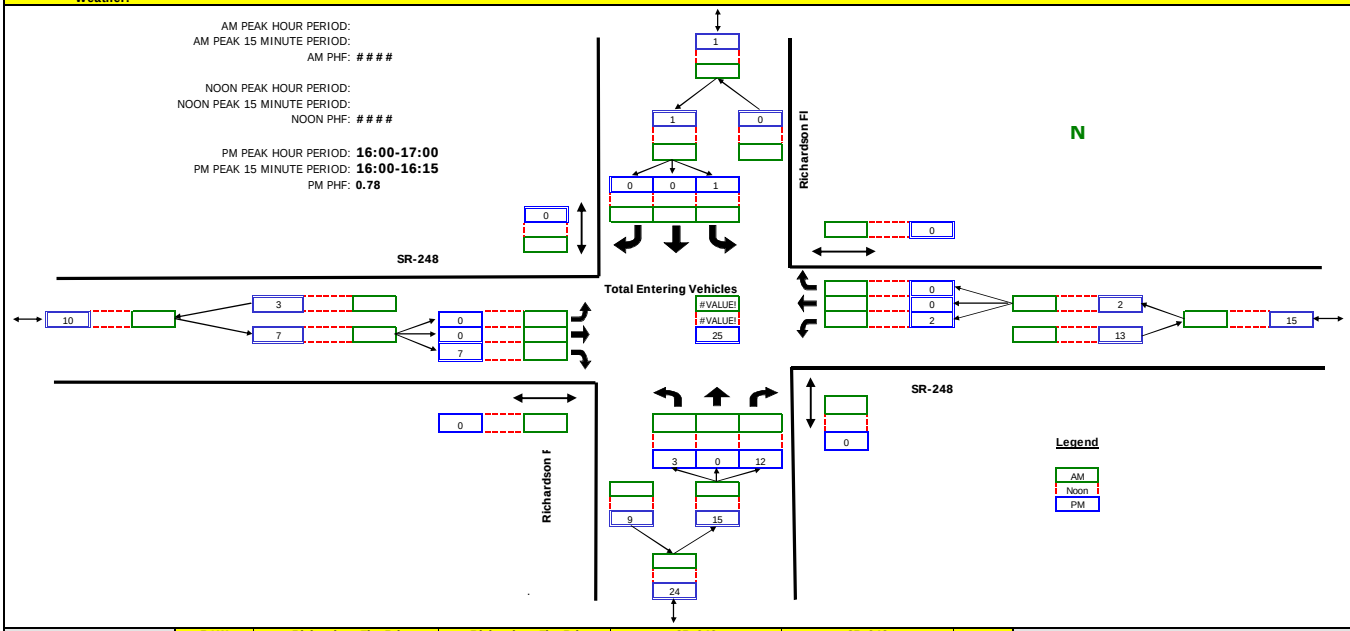
Intersection: Richardson Flat Rd / SR-248
North/South: Richardson Flat Rd
East/West: SR-248
Jurisdiction: Park City, UT
Project Title:
Project No: P394
Weather:

Date: 3-1-12, Thu
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 98.5%
Adjustment Station #: 606
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:00-17:00**
PM PEAK 15 MINUTE PERIOD: **16:00-16:15**
PM PHF: **0.78**



RAW COUNT SUMMARIES	Richardson Flat Rd Northbound				Richardson Flat Rd Southbound				SR-248 Eastbound				SR-248 Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	0	0	3	0	1	0	0	0	0	0	4	0	0	0	0	0	8
16:15-16:30	0	0	4	0	0	0	0	0	0	0	2	0	1	0	0	0	7
16:30-16:45	2	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	6
16:45-17:00	1	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	4
17:00-17:15	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
17:15-17:30	2	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0	7
17:30-17:45	1	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	6
17:45-18:00	2	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	5

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

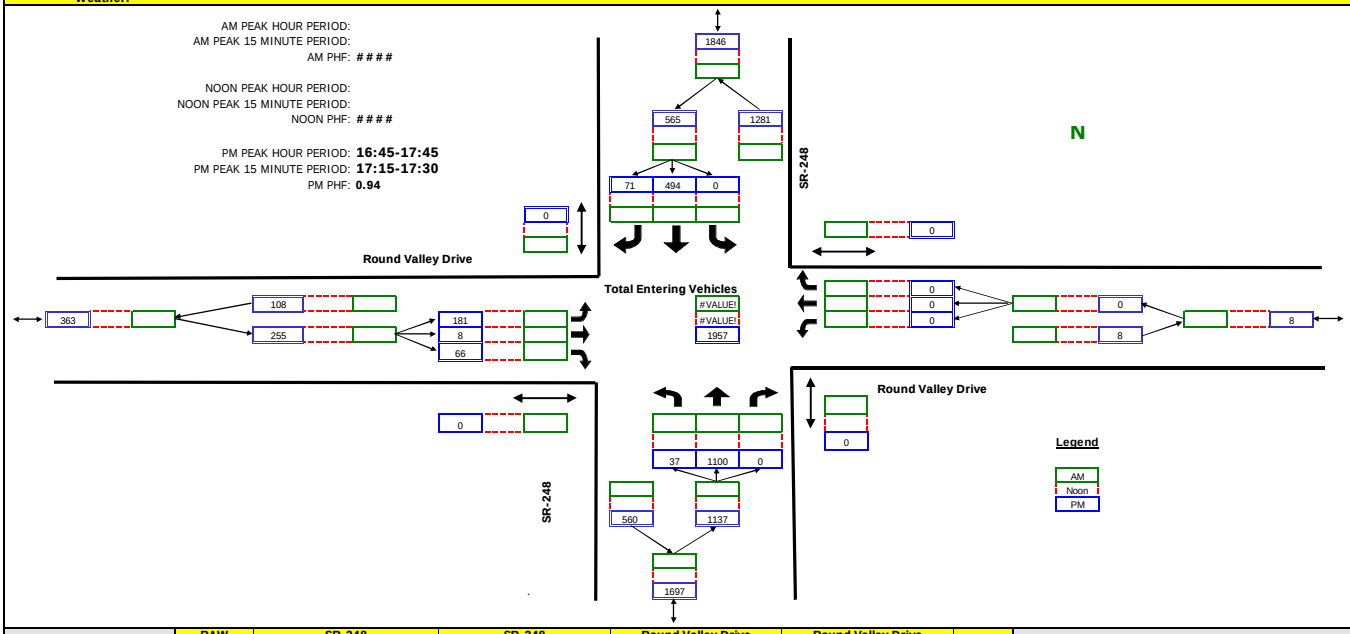
Intersection: SR-248 / Round Valley Drive
North/South: SR-248
East/West: Round Valley Drive
Jurisdiction: Park City, UT
Project Title:
Project No: P394
Weather:

Date: 3-1-12, Thu
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 98.5%
Adjustment Station #: 606
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:45-17:45**
PM PEAK 15 MINUTE PERIOD: **17:15-17:30**
PM PHF: **0.94**



RAW COUNT SUMMARIES	SR-248 Northbound				SR-248 Southbound				Round Valley Drive Eastbound				Round Valley Drive Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	17	214	0	0	0	99	30	0	34	0	9	0	0	0	0	0	403
16:15-16:30	18	219	0	0	0	128	30	0	38	0	15	0	0	0	0	0	448
16:30-16:45	6	240	0	0	0	117	10	0	43	0	26	0	0	0	0	0	442
16:45-17:00	15	241	0	0	0	118	14	0	46	2	16	0	0	0	0	0	452
17:00-17:15	8	309	0	0	0	122	19	0	42	0	17	0	0	0	0	0	517
17:15-17:30	10	293	0	0	0	125	30	0	41	6	15	0	0	0	0	0	520
17:30-17:45	4	257	0	0	0	129	8	0	52	0	18	0	0	0	0	0	468
17:45-18:00	7	156	0	0	0	123	6	0	24	0	10	0	0	0	0	0	326

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

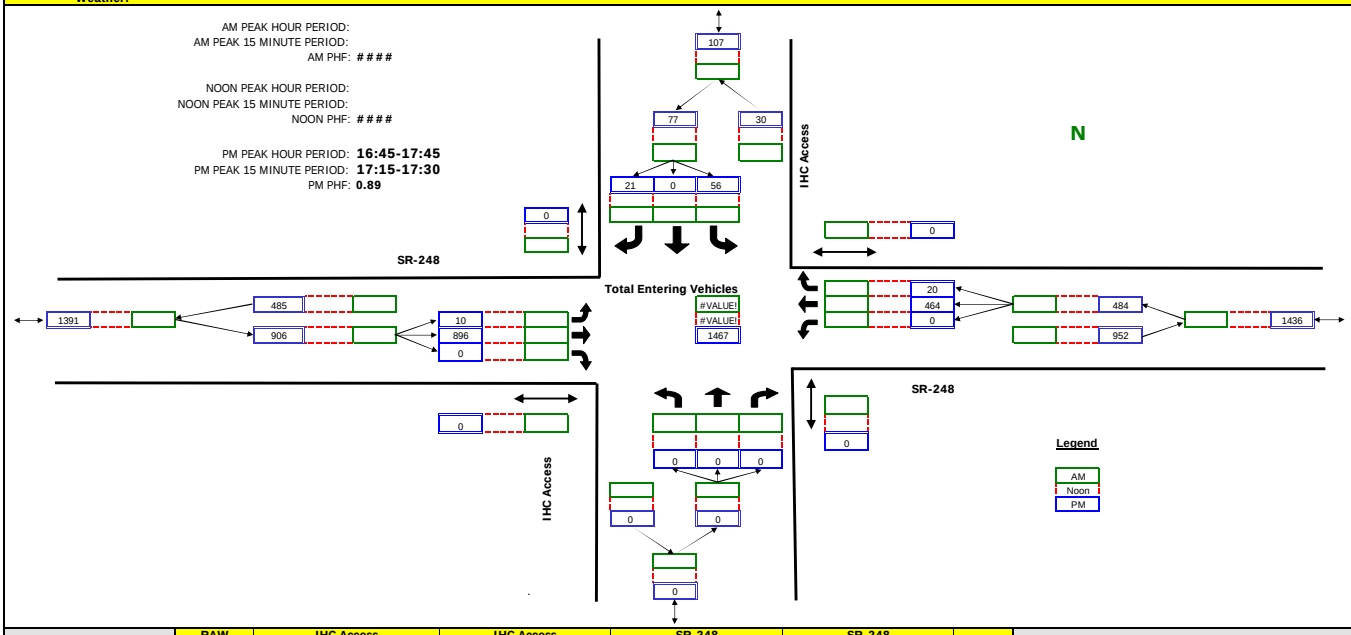
Intersection: IHC Access / SR-248
North/South: IHC Access
East/West: SR-248
Jurisdiction: Summit County/UDOT
Project Title:
Project No: P279
Weather:

Date: 8-12-09, Wed
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 112.9%
Adjustment Station #:
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:45-17:45**
PM PEAK 15 MINUTE PERIOD: **17:15-17:30**
PM PHF: **0.89**



RAW COUNT SUMMARIES	IHC Access Northbound				IHC Access Southbound				SR-248 Eastbound				SR-248 Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	0	0	0	0	18	0	4	1	4	170	0	0	0	97	1	0	294
16:15-16:30	0	0	0	0	13	0	3	0	6	167	0	0	0	115	4	0	308
16:30-16:45	0	0	0	0	12	0	4	0	1	193	0	0	0	106	4	0	320
16:45-17:00	0	0	0	0	11	0	3	0	3	200	0	0	0	110	5	0	332
17:00-17:15	0	0	0	0	17	0	6	0	1	228	0	0	0	98	7	0	357
17:15-17:30	0	0	0	0	15	0	8	0	4	258	0	0	0	126	3	0	414
17:30-17:45	0	0	0	0	13	0	4	0	2	210	0	0	0	130	5	0	364
17:45-18:00	0	0	0	0	17	0	4	0	4	153	0	0	0	123	6	0	307

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

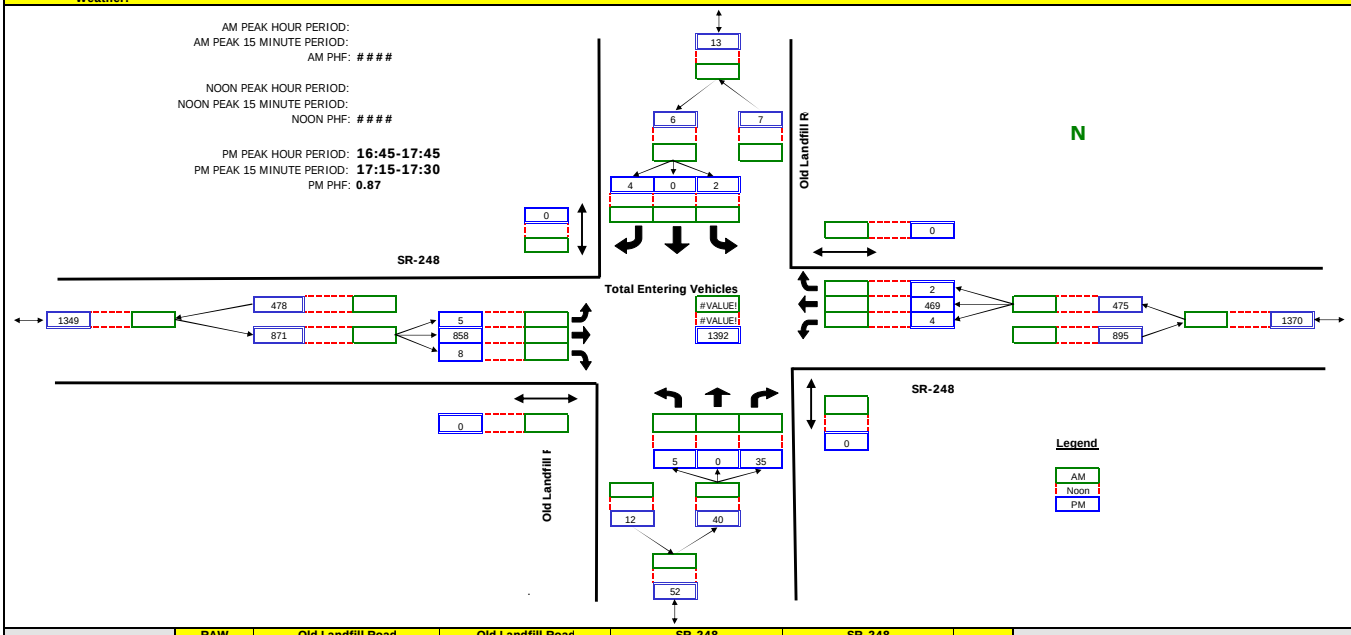
Intersection: Old Landfill Road / SR-248
North/South: Old Landfill Road
East/West: SR-248
Jurisdiction: Summit County/UDOT
Project Title:
Project No: P279
Weather:

Date: 8-12-09, Wed
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 112.9%
Adjustment Station #:
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:45-17:45**
PM PEAK 15 MINUTE PERIOD: **17:15-17:30**
PM PHF: **0.87**



RAW COUNT SUMMARIES	Old Landfill Road Northbound Left	Thru	Right	Peds	Old Landfill Road Southbound Left	Thru	Right	Peds	SR-248 Eastbound Left	Thru	Right	Peds	SR-248 Westbound Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOON PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
16:00-16:15	3	0	3	0	0	0	0	0	0	167	5	0	1	114	0	0	293
16:15-16:30	4	0	5	0	0	0	0	0	0	176	3	0	0	118	0	0	306
16:30-16:45	2	0	1	0	0	0	0	0	0	187	2	0	1	109	1	0	303
16:45-17:00	2	0	1	0	1	0	1	0	1	206	2	0	0	120	0	0	334
17:00-17:15	0	0	3	0	1	0	2	0	2	216	1	0	1	97	0	0	323
17:15-17:30	2	0	27	0	0	0	0	0	0	229	5	0	2	132	2	0	399
17:30-17:45	1	0	4	0	0	0	1	0	2	207	0	0	1	120	0	0	336
17:45-18:00	0	0	0	0	0	0	0	0	0	147	3	0	2	148	0	0	300

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

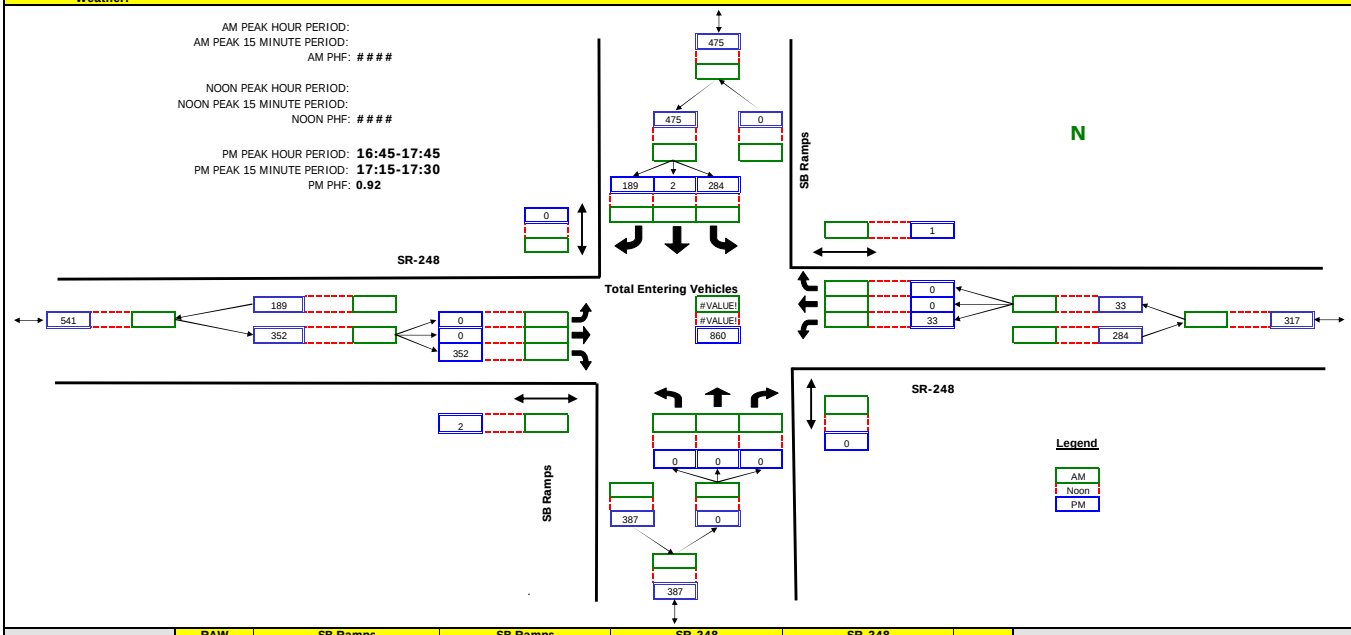
Intersection: SB Ramps / SR-248
North/South: SB Ramps
East/West: SR-248
Jurisdiction: Summit County/UDOT
Project Title:
Project No: P279
Weather:

Date: 8-12-09, Wed
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 112.9%
Adjustment Station #:
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:45-17:45**
PM PEAK 15 MINUTE PERIOD: **17:15-17:30**
PM PHF: **0.92**



RAW COUNT SUMMARIES	SB Ramps Northbound Left	Thru	Right	Peds	SB Ramps Southbound Left	Thru	Right	Peds	SR-248 Eastbound Left	Thru	Right	Peds	SR-248 Westbound Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOON PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
16:00-16:15	0	0	0	0	54	2	26	0	0	0	73	0	5	0	0	0	160
16:15-16:30	0	0	0	0	57	0	50	0	0	0	68	0	7	0	0	0	182
16:30-16:45	0	0	0	0	63	0	34	0	0	0	92	0	10	0	0	0	199
16:45-17:00	0	0	0	0	60	1	42	0	0	0	85	0	9	0	0	0	197
17:00-17:15	0	0	0	0	64	1	38	0	0	0	91	0	10	0	0	1	204
17:15-17:30	0	0	0	0	80	0	55	0	0	0	89	0	10	0	0	0	234
17:30-17:45	0	0	0	0	80	0	54	0	0	0	87	2	4	0	0	0	225
17:45-18:00	0	0	0	0	63	0	46	0	0	0	50	0	9	0	0	0	168

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

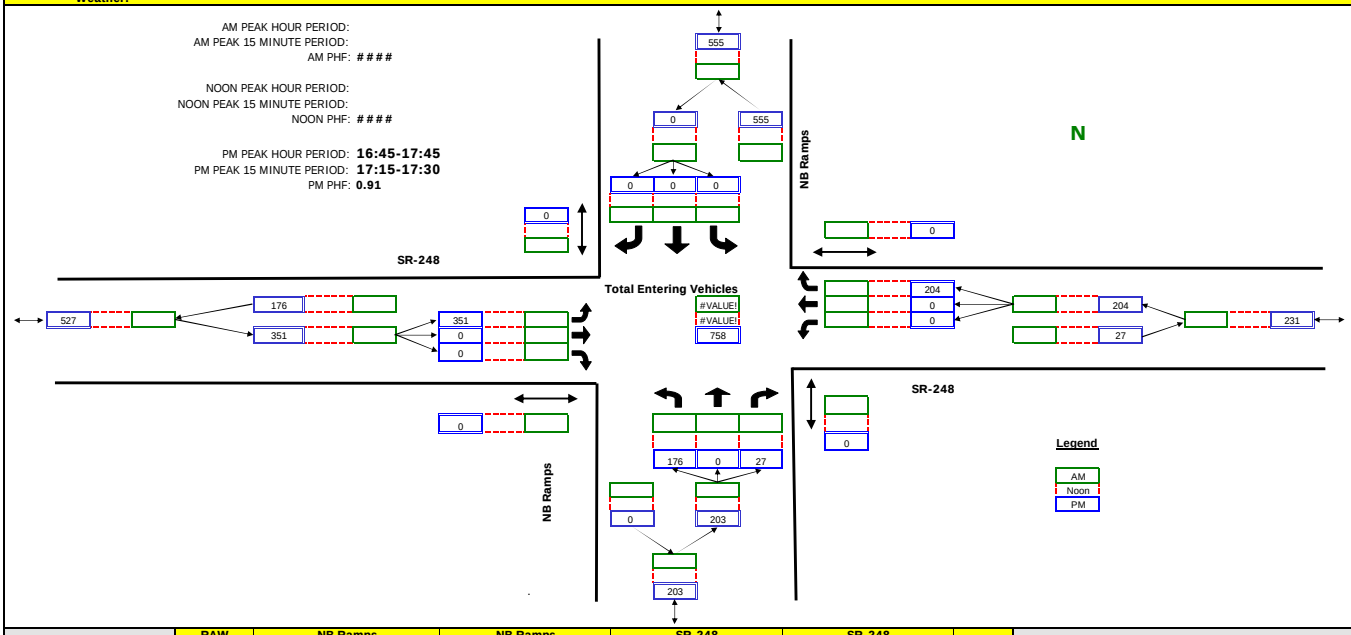
Intersection: NB Ramps / SR-248
North/South: NB Ramps
East/West: SR-248
Jurisdiction: Summit County/UDOT
Project Title:
Project No: P279
Weather:

Date: 8-12-09, Wed
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 112.9%
Adjustment Station #:
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:45-17:45**
PM PEAK 15 MINUTE PERIOD: **17:15-17:30**
PM PHF: **0.91**



RAW COUNT SUMMARIES	NB Ramps Northbound				NB Ramps Southbound				SR-248 Eastbound				SR-248 Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	36	0	7	0	0	0	0	0	67	0	0	0	0	0	47	0	157
16:15-16:30	40	0	3	0	0	0	0	0	68	0	0	0	0	0	50	0	161
16:30-16:45	31	0	5	0	0	0	0	0	81	0	0	0	0	0	49	0	166
16:45-17:00	42	0	7	0	0	0	0	0	79	0	0	0	0	0	58	0	186
17:00-17:15	43	0	4	0	0	0	0	0	104	0	0	0	0	0	43	0	194
17:15-17:30	38	0	8	0	0	0	0	0	109	0	0	0	0	0	53	0	208
17:30-17:45	53	0	8	0	0	0	0	0	59	0	0	0	0	0	50	0	170
17:45-18:00	33	0	5	0	0	0	0	0	67	5	0	0	0	0	54	0	164

HALES ENGINEERING
innovative transportation solutions

APPENDIX B

LOS Results

HALES ENGINEERING
innovative transportation solutions

SimTraffic LOS Report

Project: PC - Raleigh Studios TIS
Analysis Period: *Existing 2012 Conditions*
Time Period: *p.m. Peak Hour* **Project #:** *UT12-336*

Intersection: SR-248 & Richardson Flat Rd
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	1,130	1,145	101	3.6	*A*
	R	10	10	98	2.5	*A*
	Subtotal	1,140	1,155	101	3.6	*A*
SB	L	5	5	100	9.6	*A*
	T	555	563	101	1.3	*A*
	Subtotal	560	568	101	1.4	*A*
WB	L	5	4	80	26.3	*D*
	R	10	11	107	15.4	*C*
	Subtotal	***15***	***15***	***100***	***18.3***	***C***
Total		1,716	1,738	101	3.0	*A*

Intersection: SR-248 & Round Valley Drive
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	40	38	95	11.2	*B*
	T	1,100	1,117	102	4.7	*A*
	Subtotal	1,140	1,155	101	4.9	*A*
SB	T	490	497	101	3.2	*A*
	R	70	72	103	0.6	*A*
	Subtotal	560	569	102	2.9	*A*
EB	L	180	177	98	40.4	*D*
	R	70	70	100	3.5	*A*
	Subtotal	250	247	99	29.9	*C*
Total		1,950	1,971	101	7.5	*A*

HALES ENGINEERING
innovative transportation solutions

SimTraffic LOS Report

Project: PC - Raleigh Studios TIS
Analysis Period: *Existing 2012 Conditions*
Time Period: *p.m. Peak Hour* **Project #:** *UT12-336*

Intersection: SB Ramps & SR-248
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
SB	L	370	376	102	46.8	*D*
	R	210	214	102	8.6	*A*
	Subtotal	580	590	102	32.9	*C*
EB	T	810	808	100	10.3	*B*
	R	470	486	103	4.6	*A*
	Subtotal	1,280	1,294	101	8.2	*A*
WB	L	40	39	98	16.1	*B*
	T	351	351	100	7.6	*A*
	Subtotal	391	390	100	8.5	*A*
Total		2,251	2,274	101	14.6	*B*

Intersection: NB Ramps & SR-248
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	220	221	100	44.1	*D*
	R	40	42	105	7.2	*A*
	Subtotal	260	263	101	38.2	*D*
EB	L	460	462	100	12.4	*B*
	T	720	723	100	8.1	*A*
	Subtotal	1,180	1,185	100	9.8	*A*
WB	T	170	171	101	13.7	*B*
	R	270	260	96	8.6	*A*
	Subtotal	440	431	98	10.6	*B*
Total		1,880	1,879	100	14.0	*B*

1: SR-248 & Richardson Flat Rd Performance by movement Interval #1 4:45

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.1	0.3
Delay / Veh (s)	17.4	13.0	3.2	1.6	16.6	1.3	2.7
Vehicles Entered	1	3	280	2	1	142	429
Vehicles Exited	1	2	280	2	1	138	424
Hourly Exit Rate	4	8	1120	8	4	552	1696
Input Volume	5	10	1097	10	5	539	1666
% of Volume	80	80	102	80	80	102	102

1: SR-248 & Richardson Flat Rd Performance by movement Interval #2 5:00

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	0.4	0.0	0.0	0.1	0.5
Delay / Veh (s)	27.8	24.8	4.5	4.1	11.3	1.3	3.7
Vehicles Entered	1	3	314	3	1	143	465
Vehicles Exited	1	3	313	3	1	148	469
Hourly Exit Rate	4	12	1252	12	4	592	1876
Input Volume	5	11	1228	11	5	604	1864
% of Volume	80	109	102	109	80	98	101

1: SR-248 & Richardson Flat Rd Performance by movement Interval #3 5:15

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.1	0.3
Delay / Veh (s)	16.1	15.4	3.2	2.1	3.7	1.3	2.8
Vehicles Entered	2	3	275	2	2	142	426
Vehicles Exited	2	3	276	2	2	138	423
Hourly Exit Rate	8	12	1104	8	8	552	1692
Input Volume	5	10	1097	10	5	539	1666
% of Volume	160	120	101	80	160	102	102

1: SR-248 & Richardson Flat Rd Performance by movement Interval #4 5:30

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.1	0.3
Delay / Veh (s)	27.6	11.7	3.3	1.7	12.6	1.3	2.8
Vehicles Entered	1	2	275	3	1	134	416
Vehicles Exited	1	2	276	3	1	139	422
Hourly Exit Rate	4	8	1104	12	4	556	1688
Input Volume	5	10	1097	10	5	539	1666
% of Volume	80	80	101	120	80	103	101

1: SR-248 & Richardson Flat Rd Performance by movement Entire Run

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	1.1	0.0	0.0	0.2	1.4
Delay / Veh (s)	26.3	15.4	3.6	2.5	9.6	1.3	3.0
Vehicles Entered	4	11	1144	10	5	563	1737
Vehicles Exited	4	11	1145	10	5	563	1738
Hourly Exit Rate	4	11	1145	10	5	563	1738
Input Volume	5	10	1130	10	5	555	1716
% of Volume	80	107	101	98	100	101	101

3: SR-248 & Round Valley Drive Performance by movement Interval #1 4:45

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	0.5	0.0	0.0	0.3	0.1	0.0	0.9
Delay / Veh (s)	39.4	3.5	9.7	4.3	2.9	0.5	6.9
Vehicles Entered	44	19	10	272	124	17	486
Vehicles Exited	42	19	9	273	125	18	486
Hourly Exit Rate	168	76	36	1092	500	72	1944
Input Volume	175	68	39	1068	476	68	1894
% of Volume	96	112	92	102	105	106	103

3: SR-248 & Round Valley Drive Performance by movement Interval #2 5:00

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	0.6	0.0	0.0	0.4	0.1	0.0	1.2
Delay / Veh (s)	40.4	3.3	13.6	5.3	3.8	0.8	8.3
Vehicles Entered	51	18	12	302	126	16	525
Vehicles Exited	52	17	12	299	126	16	522
Hourly Exit Rate	208	68	48	1196	504	64	2088
Input Volume	196	76	43	1196	533	76	2120
% of Volume	106	89	112	100	95	84	98

3: SR-248 & Round Valley Drive Performance by movement Interval #3 5:15

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	0.4	0.0	0.0	0.3	0.1	0.0	0.9
Delay / Veh (s)	40.8	3.6	12.0	4.4	3.1	0.7	6.9
Vehicles Entered	39	17	8	273	126	20	483
Vehicles Exited	38	18	8	276	127	20	487
Hourly Exit Rate	152	72	32	1104	508	80	1948
Input Volume	175	68	39	1068	476	68	1894
% of Volume	87	106	82	103	107	118	103

3: SR-248 & Round Valley Drive Performance by movement Interval #4 5:30

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	0.5	0.0	0.0	0.3	0.1	0.0	1.0
Delay / Veh (s)	42.0	3.6	8.9	4.6	2.7	0.5	7.7
Vehicles Entered	45	17	8	270	119	18	477
Vehicles Exited	46	16	9	269	118	17	475
Hourly Exit Rate	184	64	36	1076	472	68	1900
Input Volume	175	68	39	1068	476	68	1894
% of Volume	105	94	92	101	99	100	100

3: SR-248 & Round Valley Drive Performance by movement Entire Run

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	2.0	0.1	0.1	1.4	0.4	0.0	4.1
Delay / Veh (s)	40.4	3.5	11.2	4.7	3.2	0.6	7.5
Vehicles Entered	178	71	38	1118	496	72	1973
Vehicles Exited	177	70	38	1117	497	72	1971
Hourly Exit Rate	177	70	38	1117	497	72	1971
Input Volume	180	70	40	1100	490	70	1950
% of Volume	98	100	95	102	101	103	101

5: SB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	0.6	0.1	0.0	0.2	1.2	0.1	2.2
Delay / Veh (s)	10.3	4.4	14.7	6.9	44.9	8.4	14.2
Vehicles Entered	195	120	11	85	94	51	556
Vehicles Exited	193	120	11	86	92	51	553
Hourly Exit Rate	772	480	44	344	368	204	2212
Input Volume	787	456	39	341	359	204	2186
% of Volume	98	105	113	101	103	100	101

5: SB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	0.8	0.2	0.1	0.2	1.5	0.1	2.9
Delay / Veh (s)	12.3	5.0	22.1	8.7	51.0	9.0	16.8
Vehicles Entered	221	127	10	92	108	57	615
Vehicles Exited	222	129	10	90	107	58	616
Hourly Exit Rate	888	516	40	360	428	232	2464
Input Volume	881	511	43	381	402	228	2446
% of Volume	101	101	93	94	106	102	101

5: SB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	0.5	0.1	0.0	0.2	1.1	0.1	2.1
Delay / Veh (s)	8.8	4.5	13.6	7.5	45.7	8.3	13.5
Vehicles Entered	196	120	10	87	88	52	553
Vehicles Exited	197	120	10	89	89	52	557
Hourly Exit Rate	788	480	40	356	356	208	2228
Input Volume	787	456	39	341	359	204	2186
% of Volume	100	105	103	104	99	102	102

5: SB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	0.5	0.1	0.0	0.2	1.1	0.1	2.1
Delay / Veh (s)	9.7	4.4	12.1	7.1	45.0	8.4	13.7
Vehicles Entered	196	117	10	88	86	54	551
Vehicles Exited	196	118	8	86	88	54	550
Hourly Exit Rate	784	472	32	344	352	216	2200
Input Volume	787	456	39	341	359	204	2186
% of Volume	100	104	82	101	98	106	101

5: SB Ramps & SR-248 Performance by movement Entire Run

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	2.3	0.6	0.2	0.7	4.9	0.5	9.2
Delay / Veh (s)	10.3	4.6	16.1	7.6	46.8	8.6	14.6
Vehicles Entered	808	485	40	353	375	214	2275
Vehicles Exited	808	486	39	351	376	214	2274
Hourly Exit Rate	808	486	39	351	376	214	2274
Input Volume	810	470	40	351	370	210	2251
% of Volume	100	103	98	100	102	102	101

6: NB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	0.4	0.4	0.2	0.1	0.7	0.0	1.8
Delay / Veh (s)	12.4	8.2	14.2	8.4	46.7	7.5	14.4
Vehicles Entered	113	172	40	62	56	10	453
Vehicles Exited	116	178	41	62	55	11	463
Hourly Exit Rate	464	712	164	248	220	44	1852
Input Volume	447	699	165	262	214	39	1826
% of Volume	104	102	99	95	103	113	101

6: NB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	0.5	0.4	0.2	0.2	0.6	0.0	1.9
Delay / Veh (s)	12.9	8.1	14.2	9.0	41.4	7.2	13.5
Vehicles Entered	131	197	48	72	54	14	516
Vehicles Exited	126	192	47	72	56	14	507
Hourly Exit Rate	504	768	188	288	224	56	2028
Input Volume	500	783	185	293	239	43	2043
% of Volume	101	98	102	98	94	130	99

6: NB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	0.4	0.4	0.2	0.2	0.7	0.0	1.9
Delay / Veh (s)	12.1	8.4	13.2	8.8	47.5	7.0	14.3
Vehicles Entered	107	178	41	66	56	9	457
Vehicles Exited	113	185	42	67	54	9	470
Hourly Exit Rate	452	740	168	268	216	36	1880
Input Volume	447	699	165	262	214	39	1826
% of Volume	101	106	102	102	101	92	103

6: NB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	0.4	0.4	0.2	0.1	0.6	0.0	1.7
Delay / Veh (s)	12.4	7.9	13.2	8.2	40.9	7.0	13.6
Vehicles Entered	110	174	43	61	54	9	451
Vehicles Exited	107	168	41	60	57	9	442
Hourly Exit Rate	428	672	164	240	228	36	1768
Input Volume	447	699	165	262	214	39	1826
% of Volume	96	96	99	92	107	92	97

6: NB Ramps & SR-248 Performance by movement Entire Run

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.6	1.6	0.7	0.6	2.7	0.1	7.3
Delay / Veh (s)	12.4	8.1	13.7	8.6	44.1	7.2	14.0
Vehicles Entered	462	722	172	260	221	42	1879
Vehicles Exited	462	723	171	260	221	42	1879
Hourly Exit Rate	462	723	171	260	221	42	1879
Input Volume	460	720	170	270	220	40	1880
% of Volume	100	100	101	96	100	105	100

Total Network Performance By Interval

Interval Start	4:45	5:00	5:15	5:30	All
Total Delay (hr)	6.3	7.7	6.2	6.1	26.3
Delay / Veh (s)	34.3	37.9	33.7	33.8	35.0
Vehicles Entered	662	743	650	650	2703
Vehicles Exited	662	725	673	645	2707
Hourly Exit Rate	2648	2900	2692	2580	2707
Input Volume	13618	15237	13618	13618	14023
% of Volume	19	19	20	19	19

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #1

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	35	18
Average Queue (ft)	11	4
95th Queue (ft)	36	20
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #2

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	37	13
Average Queue (ft)	15	2
95th Queue (ft)	41	15
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #3

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	37	18
Average Queue (ft)	15	4
95th Queue (ft)	44	19
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #4

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	34	16
Average Queue (ft)	11	3
95th Queue (ft)	36	16
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: SR-248 & Richardson Flat Rd, All Intervals

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	46	26
Average Queue (ft)	13	3
95th Queue (ft)	39	18
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: SR-248 & Round Valley Drive, Interval #1

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	83	96	38	45	106	109	82	28	23
Average Queue (ft)	48	57	21	18	58	61	32	4	7
95th Queue (ft)	90	103	42	45	111	114	87	34	25
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)								0	
Queuing Penalty (veh)								0	

Intersection: 3: SR-248 & Round Valley Drive, Interval #2

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	100	111	37	59	107	116	96	36	28
Average Queue (ft)	56	68	20	24	66	78	45	8	9
95th Queue (ft)	99	114	42	65	116	130	100	44	29
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)								0	
Queuing Penalty (veh)								0	

Intersection: 3: SR-248 & Round Valley Drive, Interval #3

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	66	92	40	45	106	117	86	9	29
Average Queue (ft)	40	53	22	20	52	69	35	2	9
95th Queue (ft)	73	100	43	51	106	128	90	13	30
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: SR-248 & Round Valley Drive, Interval #4

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	80	92	34	37	93	116	73	12	18
Average Queue (ft)	48	59	20	16	52	67	29	1	6
95th Queue (ft)	83	98	39	42	103	121	73	11	23
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: SR-248 & Round Valley Drive, All Intervals

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	104	124	47	66	126	136	121	58	33
Average Queue (ft)	48	59	21	19	57	69	35	4	7
95th Queue (ft)	88	105	41	52	110	124	88	29	27
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)								0	
Queuing Penalty (veh)								0	

Intersection: 5: SB Ramps & SR-248, Interval #1

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	196	177	45	92	57	322
Average Queue (ft)	106	98	22	44	20	232
95th Queue (ft)	201	186	51	94	58	361
Link Distance (ft)	760	760		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						3
Queuing Penalty (veh)						6

Intersection: 5: SB Ramps & SR-248, Interval #2

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	218	188	59	101	61	392
Average Queue (ft)	129	108	27	51	25	276
95th Queue (ft)	235	204	63	97	66	410
Link Distance (ft)	760	760		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						7
Queuing Penalty (veh)						17

Intersection: 5: SB Ramps & SR-248, Interval #3

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	154	128	44	104	70	328
Average Queue (ft)	97	84	20	46	25	225
95th Queue (ft)	171	149	49	101	69	349
Link Distance (ft)	760	760		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						2
Queuing Penalty (veh)						4

Intersection: 5: SB Ramps & SR-248, Interval #4

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	173	164	47	78	60	320
Average Queue (ft)	98	95	20	40	21	216
95th Queue (ft)	177	173	49	82	60	342
Link Distance (ft)	760	760		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						2
Queuing Penalty (veh)						5

Intersection: 5: SB Ramps & SR-248, All Intervals

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	254	236	66	127	88	427
Average Queue (ft)	107	96	22	45	23	237
95th Queue (ft)	199	180	54	94	63	371
Link Distance (ft)	760	760		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						4
Queuing Penalty (veh)						8

Intersection: 6: NB Ramps & SR-248, Interval #1

Movement	EB	EB	EB	WB	WB	NB
Directions Served	L	T	T	T	T	LT
Maximum Queue (ft)	218	106	140	67	58	242
Average Queue (ft)	126	56	84	35	23	156
95th Queue (ft)	227	117	152	79	59	266
Link Distance (ft)		585	585	1198	1198	969
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200					
Storage Blk Time (%)	1					0
Queuing Penalty (veh)	4					0

Intersection: 6: NB Ramps & SR-248, Interval #2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	219	97	126	76	60	236	5
Average Queue (ft)	131	56	80	42	26	144	1
95th Queue (ft)	219	107	132	83	64	248	11
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	1					0	
Queuing Penalty (veh)	3					0	

Intersection: 6: NB Ramps & SR-248, Interval #3

Movement	EB	EB	EB	WB	WB	NB
Directions Served	L	T	T	T	T	LT
Maximum Queue (ft)	201	120	144	78	60	240
Average Queue (ft)	119	65	84	38	26	156
95th Queue (ft)	206	130	150	88	63	255
Link Distance (ft)		585	585	1198	1198	969
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200					
Storage Blk Time (%)	1					0
Queuing Penalty (veh)	2					0

Intersection: 6: NB Ramps & SR-248, Interval #4

Movement	EB	EB	EB	WB	WB	NB
Directions Served	L	T	T	T	T	LT
Maximum Queue (ft)	206	92	115	65	50	213
Average Queue (ft)	127	55	76	36	25	138
95th Queue (ft)	213	105	124	71	58	218
Link Distance (ft)		585	585	1198	1198	969
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200					
Storage Blk Time (%)	1					
Queuing Penalty (veh)	2					

Intersection: 6: NB Ramps & SR-248, All Intervals

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	252	131	158	97	76	284	5
Average Queue (ft)	126	58	81	37	25	149	0
95th Queue (ft)	217	116	140	81	61	248	5
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	1					0	
Queuing Penalty (veh)	3					0	

Network Summary

Network wide Queuing Penalty, Interval #1: 10
Network wide Queuing Penalty, Interval #2: 20
Network wide Queuing Penalty, Interval #3: 6
Network wide Queuing Penalty, Interval #4: 7
Network wide Queuing Penalty, All Intervals: 11

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SimTraffic LOS Report

Project: **PC - Raleigh Studios TIS**
Analysis Period: ***Existing 2012 Plus Project***
Time Period: ***p.m. Peak Hour*** **Project #:** ***UT12-336***

Intersection: **SR-248 & Richardson Flat Rd**
Type: **Unsignalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	1,191	1,199	101	4.3	*A*
	R	10	9	88	3.6	*A*
	Subtotal	1,201	1,208	101	4.3	*A*
SB	L	5	5	100	15.0	*B*
	T	719	719	100	2.2	*A*
	Subtotal	724	724	100	2.3	*A*
WB	L	5	4	80	56.0	*F*
	R	10	9	88	13.7	*B*
	Subtotal	***15***	***13***	***87***	***26.7***	***D***
Total		1,940	1,945	100	3.7	*A*

Intersection: **SR-248 & South Access**
Type: **Unsignalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	1,186	1,191	100	3.2	*A*
	R	16	15	92	1.7	*A*
	Subtotal	1,202	1,206	100	3.2	*A*
SB	L	5	4	80	13.3	*B*
	T	724	722	100	2.1	*A*
	Subtotal	729	726	100	2.2	*A*
WB	R	14	14	98	9.6	*A*
	Subtotal	***14***	***14***	***100***	***9.6***	***A***
Total		1,945	1,946	100	2.8	*A*

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SimTraffic LOS Report

Project: **PC - Raleigh Studios TIS**
Analysis Period: ***Existing 2012 Plus Project***
Time Period: ***p.m. Peak Hour*** **Project #:** ***UT12-336***

Intersection: **SR-248 & Round Valley Drive/Main Access**
Type: **Signalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	40	41	102	14.2	*B*
	T	1,115	1,120	100	9.2	*A*
	R	45	46	102	2.8	*A*
	Subtotal	1,200	1,207	101	9.1	*A*
SB	L	55	54	99	31.9	*C*
	T	496	495	100	4.7	*A*
	R	70	66	94	1.3	*A*
	Subtotal	621	615	99	6.7	*A*
EB	L	180	174	97	42.8	*D*
	R	70	71	101	8.0	*A*
	Subtotal	250	245	98	32.7	*C*
WB	L	164	162	99	39.2	*D*
	R	145	145	100	18.0	*B*
	Subtotal	309	307	99	29.2	*C*
Total		2,380	2,374	100	13.6	*B*

Intersection: **SR-248 & North Truck Access**
Type: **Unsignalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	1,442	1,439	100	2.2	*A*
	Subtotal	1,442	1,439	100	2.2	*A*
SB	T	620	612	99	3.0	*A*
	Subtotal	620	612	99	3.0	*A*
WB	R	5	4	80	14.2	*B*
	Subtotal	***5***	***4***	***80***	***14.2***	***B***
Total		2,067	2,055	99	2.4	*A*

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SimTraffic LOS Report

Project: PC - Raleigh Studios TIS
Analysis Period: *Existing 2012 Plus Project*
Time Period: *p.m. Peak Hour* **Project #:** *UT12-336*

Intersection: SB Ramps & SR-248
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
SB	L	370	376	102	51.4	*D*
	R	246	249	101	9.0	*A*
	Subtotal	616	625	101	34.5	*C*
EB	T	929	923	99	11.7	*B*
	R	520	520	100	5.0	*A*
	Subtotal	1,449	1,443	100	9.3	*A*
WB	L	40	37	92	18.9	*B*
	T	374	363	97	7.6	*A*
	Subtotal	414	400	97	8.6	*A*
Total		2,478	2,468	100	15.6	*B*

Intersection: NB Ramps & SR-248
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	239	236	99	44.1	*D*
	R	40	42	105	7.2	*A*
	Subtotal	279	278	100	38.5	*D*
EB	L	558	542	97	13.3	*B*
	T	736	749	102	8.8	*A*
	Subtotal	1,294	1,291	100	10.7	*B*
WB	T	175	168	96	18.5	*B*
	R	270	267	99	9.0	*A*
	Subtotal	445	435	98	12.7	*B*
Total		2,018	2,004	99	15.0	*B*

1: SR-248 & Richardson Flat Rd Performance by movement Interval #1 4:45

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.1	0.5
Total Del/Veh (s)		10.2	4.1	2.6	14.9	1.8	3.4
Speed Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.1	0.3
Speed Del/Veh (s)		10.1	2.7	1.3	14.9	1.8	2.5
Vehicles Entered	0	2	291	2	2	179	476
Vehicles Exited	0	2	290	2	2	178	474
Hourly Exit Rate	0	8	1160	8	8	712	1896
Input Volume	5	10	1156	10	5	698	1884
% of Volume	0	80	100	80	160	102	101

1: SR-248 & Richardson Flat Rd Performance by movement Interval #2 5:00

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	0.5	0.0	0.0	0.1	0.6
Total Del/Veh (s)	105.6	16.1	5.0	4.8	14.2	2.4	4.3
Speed Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.1	0.5
Speed Del/Veh (s)	105.4	16.0	3.2	2.4	14.2	2.4	3.2
Vehicles Entered	1	3	330	2	2	189	527
Vehicles Exited	1	3	328	2	2	190	526
Hourly Exit Rate	4	12	1312	8	8	760	2104
Input Volume	5	11	1295	11	5	782	2109
% of Volume	80	109	101	73	160	97	100

1: SR-248 & Richardson Flat Rd Performance by movement Interval #3 5:15

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.1	0.5
Total Del/Veh (s)	29.4	12.0	3.8	2.6	7.8	2.1	3.3
Speed Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.1	0.3
Speed Del/Veh (s)	29.3	11.9	2.5	1.3	7.8	2.1	2.5
Vehicles Entered	1	3	291	2	1	179	477
Vehicles Exited	1	3	292	2	1	176	475
Hourly Exit Rate	4	12	1168	8	4	704	1900
Input Volume	5	10	1156	10	5	698	1884
% of Volume	80	120	101	80	80	101	101

1: SR-248 & Richardson Flat Rd Performance by movement Interval #4 5:30

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.0	0.3	0.0	0.0	0.1	0.4
Total Del/Veh (s)	51.9	9.2	3.8	3.1	9.2	2.1	3.3
Speed Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.1	0.3
Speed Del/Veh (s)	51.7	9.1	2.6	1.8	9.2	2.1	2.5
Vehicles Entered	1	2	289	2	1	169	464
Vehicles Exited	1	2	288	2	1	175	469
Hourly Exit Rate	4	8	1152	8	4	700	1876
Input Volume	5	10	1156	10	5	698	1884
% of Volume	80	80	100	80	80	100	100

1: SR-248 & Richardson Flat Rd Performance by movement Entire Run

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.1	0.0	1.4	0.0	0.0	0.4	2.0
Total Del/Veh (s)	56.0	13.7	4.3	3.6	15.0	2.2	3.7
Speed Delay (hr)	0.1	0.0	0.9	0.0	0.0	0.4	1.5
Speed Del/Veh (s)	55.9	13.6	2.8	1.8	15.0	2.2	2.7
Vehicles Entered	4	9	1200	9	5	717	1944
Vehicles Exited	4	9	1199	9	5	719	1945
Hourly Exit Rate	4	9	1199	9	5	719	1945
Input Volume	5	10	1191	10	5	719	1940
% of Volume	80	88	101	88	100	100	100

2: SR-248 & South Access Performance by movement Interval #1 4:45

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.3
Total Del/Veh (s)	8.9	3.0	1.7	13.6	1.7	2.6
Speed Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.3
Speed Del/Veh (s)	8.8	3.0	1.7	13.6	1.7	2.6
Vehicles Entered	3	290	3	1	179	476
Vehicles Exited	3	290	3	1	181	478
Hourly Exit Rate	12	1160	12	4	724	1912
Input Volume	14	1151	16	5	703	1889
% of Volume	86	101	75	80	103	101

2: SR-248 & South Access Performance by movement Interval #2 5:00

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.3	0.0	0.0	0.1	0.5
Total Del/Veh (s)	13.5	3.4	1.5	19.2	2.5	3.2
Speed Delay (hr)	0.0	0.3	0.0	0.0	0.1	0.5
Speed Del/Veh (s)	13.4	3.4	1.5	19.2	2.5	3.2
Vehicles Entered	4	327	4	1	194	530
Vehicles Exited	4	325	4	1	191	525
Hourly Exit Rate	16	1300	16	4	764	2100
Input Volume	15	1289	17	5	788	2114
% of Volume	107	101	94	80	97	99

2: SR-248 & South Access Performance by movement Interval #3 5:15

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.4
Total Del/Veh (s)	7.9	2.9	1.1	11.8	2.2	2.7
Speed Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.4
Speed Del/Veh (s)	7.8	2.9	1.1	11.8	2.2	2.7
Vehicles Entered	4	291	4	1	180	480
Vehicles Exited	4	292	4	1	180	481
Hourly Exit Rate	16	1168	16	4	720	1924
Input Volume	14	1151	16	5	703	1889
% of Volume	114	101	100	80	102	102

2: SR-248 & South Access Performance by movement Interval #4 5:30

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.4
Total Del/Veh (s)	7.2	3.0	2.1	8.4	2.0	2.7
Speed Delay (hr)	0.0	0.2	0.0	0.0	0.1	0.4
Speed Del/Veh (s)	7.1	3.0	2.1	8.4	2.0	2.7
Vehicles Entered	3	286	5	1	170	465
Vehicles Exited	3	284	5	1	170	463
Hourly Exit Rate	12	1136	20	4	680	1852
Input Volume	14	1151	16	5	703	1889
% of Volume	86	99	125	80	97	98

2: SR-248 & South Access Performance by movement Entire Run

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	1.1	0.0	0.0	0.4	1.5
Total Del/Veh (s)	9.6	3.2	1.7	13.3	2.1	2.8
Speed Delay (hr)	0.0	1.1	0.0	0.0	0.4	1.5
Speed Del/Veh (s)	9.5	3.2	1.7	13.3	2.1	2.8
Vehicles Entered	14	1194	15	4	724	1951
Vehicles Exited	14	1191	15	4	722	1946
Hourly Exit Rate	14	1191	15	4	722	1946
Input Volume	14	1186	16	5	724	1945
% of Volume	98	100	92	80	100	100

3: SR-248 & Round Valley Drive/Main Access Performance by movement Interval #1 4:45

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.5	0.0	0.5	0.2	0.0	0.7	0.0	0.1	0.1	0.0	2.2
Total Del/Veh (s)	41.4	7.6	38.9	15.2	14.7	9.2	3.2	27.7	4.0	0.9	13.1
Speed Delay (hr)	0.4	0.0	0.4	0.2	0.0	0.7	0.0	0.1	0.1	0.0	2.0
Speed Del/Veh (s)	36.8	7.1	34.3	14.6	14.7	9.2	3.1	27.7	4.0	0.9	12.3
Vehicles Entered	41	20	41	38	10	271	12	13	118	16	580
Vehicles Exited	39	20	39	37	10	275	12	13	121	16	582
Hourly Exit Rate	156	80	156	148	40	1100	48	52	484	64	2328
Input Volume	175	68	159	141	39	1083	44	53	481	68	2311
% of Volume	89	118	98	105	103	102	109	98	101	94	101

3: SR-248 & Round Valley Drive/Main Access Performance by movement Interval #2 5:00

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.6	0.0	0.5	0.2	0.0	0.8	0.0	0.2	0.2	0.0	2.6
Total Del/Veh (s)	40.7	8.5	37.1	19.8	13.8	9.9	2.8	40.0	5.9	1.8	14.4
Speed Delay (hr)	0.5	0.0	0.4	0.2	0.0	0.8	0.0	0.2	0.2	0.0	2.5
Speed Del/Veh (s)	36.3	7.7	32.7	19.1	13.8	9.9	2.8	40.0	5.9	1.8	13.7
Vehicles Entered	48	20	43	40	12	304	14	16	132	16	645
Vehicles Exited	50	20	45	40	11	298	13	15	130	16	638
Hourly Exit Rate	200	80	180	160	44	1192	52	60	520	64	2552
Input Volume	196	76	178	158	43	1211	49	60	539	76	2586
% of Volume	102	105	101	101	102	98	106	100	96	84	99

3: SR-248 & Round Valley Drive/Main Access Performance by movement Interval #3 5:15

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.5	0.0	0.4	0.2	0.0	0.7	0.0	0.1	0.2	0.0	2.1
Total Del/Veh (s)	39.6	8.0	37.8	17.6	14.5	8.7	2.7	26.6	4.5	1.4	12.7
Speed Delay (hr)	0.4	0.0	0.4	0.2	0.0	0.7	0.0	0.1	0.2	0.0	2.0
Speed Del/Veh (s)	35.0	7.4	33.5	17.0	14.5	8.7	2.7	26.6	4.5	1.4	12.0
Vehicles Entered	43	16	39	34	10	276	11	14	126	17	586
Vehicles Exited	42	16	38	34	10	282	11	14	128	17	592
Hourly Exit Rate	168	64	152	136	40	1128	44	56	512	68	2368
Input Volume	175	68	159	141	39	1083	44	53	481	68	2311
% of Volume	96	94	96	96	103	104	100	106	106	100	102

3: SR-248 & Round Valley Drive/Main Access Performance by movement Interval #4 5:30

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.5	0.0	0.4	0.2	0.0	0.6	0.0	0.1	0.1	0.0	2.0
Total Del/Veh (s)	41.2	7.2	37.5	16.7	12.6	8.2	2.1	32.0	4.0	1.1	12.9
Speed Delay (hr)	0.5	0.0	0.4	0.2	0.0	0.6	0.0	0.1	0.1	0.0	1.9
Speed Del/Veh (s)	37.0	6.7	32.8	15.9	12.6	8.2	2.1	32.0	4.0	1.1	12.1
Vehicles Entered	42	15	40	33	10	267	10	12	117	16	562
Vehicles Exited	43	14	40	34	9	266	10	12	117	16	561
Hourly Exit Rate	172	56	160	136	36	1064	40	48	468	64	2244
Input Volume	175	68	159	141	39	1083	44	53	481	68	2311
% of Volume	98	82	101	96	92	98	91	91	97	94	97

3: SR-248 & Round Valley Drive/Main Access Performance by movement Entire Run

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	2.1	0.2	1.8	0.7	0.2	2.9	0.0	0.5	0.6	0.0	9.0
Total Del/Veh (s)	42.8	8.0	39.2	18.0	14.2	9.2	2.8	31.9	4.7	1.3	13.6
Speed Delay (hr)	1.9	0.1	1.6	0.7	0.2	2.9	0.0	0.5	0.6	0.0	8.5
Speed Del/Veh (s)	38.1	7.4	34.5	17.3	14.2	9.2	2.7	31.9	4.7	1.3	12.8
Vehicles Entered	174	70	163	144	41	1118	46	54	493	65	2368
Vehicles Exited	174	71	162	145	41	1120	46	54	495	66	2374
Hourly Exit Rate	174	71	162	145	41	1120	46	54	495	66	2374
Input Volume	180	70	164	145	40	1115	45	55	496	70	2380
% of Volume	97	101	99	100	102	100	102	99	100	94	100

4: SR-248 & North Truck Access Performance by movement Interval #1 4:45

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.2	0.1	0.3
Total Del/Veh (s)	6.9	2.2	2.7	2.4
Speed Delay (hr)	0.0	0.2	0.1	0.3
Speed Del/Veh (s)	6.8	2.2	2.7	2.4
Vehicles Entered	1	350	144	495
Vehicles Exited	2	351	147	500
Hourly Exit Rate	8	1404	588	2000
Input Volume	5	1400	602	2007
% of Volume	160	100	98	100

4: SR-248 & North Truck Access Performance by movement Interval #2 5:00

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.2	0.2	0.4
Total Del/Veh (s)	21.0	2.3	3.2	2.6
Speed Delay (hr)	0.0	0.2	0.2	0.4
Speed Del/Veh (s)	20.9	2.3	3.2	2.6
Vehicles Entered	1	389	168	558
Vehicles Exited	1	387	163	551
Hourly Exit Rate	4	1548	652	2204
Input Volume	5	1568	674	2247
% of Volume	80	99	97	98

4: SR-248 & North Truck Access Performance by movement Interval #3 5:15

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.2	0.1	0.3
Total Del/Veh (s)	14.9	2.1	2.8	2.4
Speed Delay (hr)	0.0	0.2	0.1	0.3
Speed Del/Veh (s)	14.8	2.1	2.8	2.4
Vehicles Entered	1	358	151	510
Vehicles Exited	1	358	156	515
Hourly Exit Rate	4	1432	624	2060
Input Volume	5	1400	602	2007
% of Volume	80	102	104	103

4: SR-248 & North Truck Access Performance by movement Interval #4 5:30

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.2	0.1	0.3
Total Del/Veh (s)	7.3	1.9	2.9	2.3
Speed Delay (hr)	0.0	0.2	0.1	0.3
Speed Del/Veh (s)	7.3	1.9	2.9	2.3
Vehicles Entered	1	342	149	492
Vehicles Exited	1	343	145	489
Hourly Exit Rate	4	1372	580	1956
Input Volume	5	1400	602	2007
% of Volume	80	98	96	97

4: SR-248 & North Truck Access Performance by movement Entire Run

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.9	0.5	1.4
Total Del/Veh (s)	14.2	2.2	3.0	2.4
Speed Delay (hr)	0.0	0.9	0.5	1.4
Speed Del/Veh (s)	14.1	2.2	3.0	2.4
Vehicles Entered	4	1439	612	2055
Vehicles Exited	4	1439	612	2055
Hourly Exit Rate	4	1439	612	2055
Input Volume	5	1442	620	2067
% of Volume	80	100	99	99

5: SB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	0.7	0.2	0.1	0.2	1.4	0.1	2.6
Total Del/Veh (s)	10.4	4.8	19.9	6.8	50.7	8.2	15.1
Speed Delay (hr)	0.7	0.2	0.1	0.2	1.3	0.1	2.4
Speed Del/Veh (s)	10.4	4.8	19.9	6.8	49.0	3.2	14.3
Vehicles Entered	227	126	11	87	89	57	597
Vehicles Exited	226	124	11	86	88	58	593
Hourly Exit Rate	904	496	44	344	352	232	2372
Input Volume	902	505	39	363	359	239	2407
% of Volume	100	98	113	95	98	97	99

5: SB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	0.9	0.2	0.0	0.2	1.5	0.2	3.0
Total Del/Veh (s)	12.6	5.2	20.7	8.4	48.2	9.5	15.9
Speed Delay (hr)	0.9	0.2	0.0	0.2	1.4	0.1	2.8
Speed Del/Veh (s)	12.6	5.2	20.7	8.4	45.6	3.5	14.9
Vehicles Entered	249	140	8	100	102	70	669
Vehicles Exited	247	140	8	99	103	70	667
Hourly Exit Rate	988	560	32	396	412	280	2668
Input Volume	1009	565	43	407	402	267	2693
% of Volume	98	99	74	97	102	105	99

5: SB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	0.7	0.2	0.0	0.2	1.2	0.2	2.4
Total Del/Veh (s)	10.8	4.7	16.3	7.0	44.6	8.5	14.0
Speed Delay (hr)	0.7	0.2	0.0	0.2	1.1	0.1	2.3
Speed Del/Veh (s)	10.8	4.7	16.3	7.0	42.7	3.3	13.2
Vehicles Entered	229	129	9	86	88	62	603
Vehicles Exited	230	128	9	88	87	62	604
Hourly Exit Rate	920	512	36	352	348	248	2416
Input Volume	902	505	39	363	359	239	2407
% of Volume	102	101	92	97	97	104	100

5: SB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	0.7	0.2	0.0	0.2	1.4	0.1	2.7
Total Del/Veh (s)	11.8	4.8	17.2	7.6	48.7	8.8	15.6
Speed Delay (hr)	0.7	0.2	0.0	0.2	1.3	0.1	2.6
Speed Del/Veh (s)	11.8	4.7	17.2	7.6	46.8	3.5	14.7
Vehicles Entered	219	125	10	93	94	59	600
Vehicles Exited	220	128	9	90	98	59	604
Hourly Exit Rate	880	512	36	360	392	236	2416
Input Volume	902	505	39	363	359	239	2407
% of Volume	98	101	92	99	109	99	100

5: SB Ramps & SR-248 Performance by movement Entire Run

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	3.0	0.7	0.2	0.8	5.4	0.6	10.7
Total Del/Veh (s)	11.7	5.0	18.9	7.6	51.4	9.0	15.6
Speed Delay (hr)	3.0	0.7	0.2	0.8	5.2	0.2	10.1
Speed Del/Veh (s)	11.6	5.0	18.9	7.6	49.2	3.4	14.7
Vehicles Entered	924	519	37	367	373	248	2468
Vehicles Exited	923	520	37	363	376	249	2468
Hourly Exit Rate	923	520	37	363	376	249	2468
Input Volume	929	520	40	374	370	246	2478
% of Volume	99	100	92	97	102	101	100

6: NB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	0.5	0.4	0.2	0.2	0.7	0.0	2.0
Total Del/Veh (s)	12.2	8.0	17.3	8.6	44.2	7.3	14.3
Speed Delay (hr)	0.5	0.4	0.2	0.1	0.7	0.0	1.9
Speed Del/Veh (s)	12.2	8.0	16.1	3.5	43.7	3.0	13.3
Vehicles Entered	129	185	42	66	57	9	488
Vehicles Exited	133	189	43	65	55	9	494
Hourly Exit Rate	532	756	172	260	220	36	1976
Input Volume	542	715	170	262	232	39	1960
% of Volume	98	106	101	99	95	92	101

6: NB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	0.6	0.5	0.2	0.2	0.8	0.0	2.3
Total Del/Veh (s)	13.6	9.0	19.8	9.0	41.4	7.2	15.0
Speed Delay (hr)	0.6	0.5	0.2	0.1	0.8	0.0	2.2
Speed Del/Veh (s)	13.6	9.0	18.4	3.9	40.9	2.8	14.0
Vehicles Entered	147	201	44	75	63	13	543
Vehicles Exited	141	193	43	76	66	13	532
Hourly Exit Rate	564	772	172	304	264	52	2128
Input Volume	607	800	190	293	260	43	2193
% of Volume	93	96	91	104	102	121	97

6: NB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	0.5	0.5	0.2	0.2	0.7	0.0	2.1
Total Del/Veh (s)	13.2	8.8	20.3	8.9	42.8	6.5	15.0
Speed Delay (hr)	0.5	0.5	0.2	0.1	0.7	0.0	2.0
Speed Del/Veh (s)	13.2	8.8	19.1	3.6	42.3	2.4	14.1
Vehicles Entered	135	181	39	63	59	10	487
Vehicles Exited	140	190	39	63	56	10	498
Hourly Exit Rate	560	760	156	252	224	40	1992
Input Volume	542	715	170	262	232	39	1960
% of Volume	103	106	92	96	97	103	102

6: NB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	0.5	0.4	0.2	0.2	0.7	0.0	2.0
Total Del/Veh (s)	13.0	8.6	14.8	8.5	39.8	6.4	14.1
Speed Delay (hr)	0.5	0.4	0.2	0.1	0.7	0.0	1.8
Speed Del/Veh (s)	13.0	8.6	13.7	3.5	39.3	2.5	13.2
Vehicles Entered	132	185	43	62	56	10	488
Vehicles Exited	128	177	43	62	59	11	480
Hourly Exit Rate	512	708	172	248	236	44	1920
Input Volume	542	715	170	262	232	39	1960
% of Volume	94	99	101	95	102	113	98

6: NB Ramps & SR-248 Performance by movement Entire Run

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	2.0	1.8	0.9	0.7	2.9	0.1	8.4
Total Del/Veh (s)	13.3	8.8	18.5	9.0	44.1	7.2	15.0
Speed Delay (hr)	2.0	1.8	0.8	0.3	2.9	0.0	7.9
Speed Del/Veh (s)	13.3	8.8	17.3	3.7	43.6	2.8	14.0
Vehicles Entered	543	752	168	267	235	42	2007
Vehicles Exited	542	749	168	267	236	42	2004
Hourly Exit Rate	542	749	168	267	236	42	2004
Input Volume	558	736	175	270	239	40	2018
% of Volume	97	102	96	99	99	105	99

Total Network Performance By Interval

Interval Start	4:45	5:00	5:15	5:30	All
Total Delay (hr)	8.4	10.1	8.4	8.3	35.2
Total Del/Veh (s)	35.2	38.3	34.6	35.2	39.2
Speed Delay (hr)	7.9	9.5	7.9	7.8	33.0
Speed Del/Veh (s)	33.1	35.8	32.5	33.1	36.8
Vehicles Entered	760	861	757	753	3133
Vehicles Exited	769	835	775	758	3139
Hourly Exit Rate	3076	3340	3100	3032	3139
Input Volume	15503	17346	15503	15503	15964
% of Volume	20	19	20	20	20

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #1

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	27	18
Average Queue (ft)	10	5
95th Queue (ft)	31	20
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #2

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	37	18
Average Queue (ft)	17	4
95th Queue (ft)	43	21
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #3

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	32	15
Average Queue (ft)	13	2
95th Queue (ft)	39	15
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #4

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	33	15
Average Queue (ft)	11	3
95th Queue (ft)	35	16
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: SR-248 & Richardson Flat Rd, All Intervals

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	44	26
Average Queue (ft)	13	4
95th Queue (ft)	38	18
Link Distance (ft)	583	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		175
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: SR-248 & South Access, Interval #1

Movement	WB	SB	SB
Directions Served	R	L	T
Maximum Queue (ft)	28	16	5
Average Queue (ft)	9	2	0
95th Queue (ft)	31	14	0
Link Distance (ft)	650		625
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: SR-248 & South Access, Interval #2

Movement	WB	SB	SB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	35	13	23	10
Average Queue (ft)	15	3	3	1
95th Queue (ft)	40	16	24	12
Link Distance (ft)	650		625	625
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 2: SR-248 & South Access, Interval #3

Movement	WB	SB	SB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	30	18	12	15
Average Queue (ft)	12	4	1	2
95th Queue (ft)	35	20	12	21
Link Distance (ft)	650		625	625
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 2: SR-248 & South Access, Interval #4

Movement	WB	SB	SB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	28	13	16	7
Average Queue (ft)	10	2	2	1
95th Queue (ft)	32	13	18	13
Link Distance (ft)	650		625	625
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 2: SR-248 & South Access, All Intervals

Movement	WB	SB	SB	SB
Directions Served	R	L	T	T
Maximum Queue (ft)	37	27	42	29
Average Queue (ft)	12	3	2	1
95th Queue (ft)	35	16	16	13
Link Distance (ft)	650		625	625
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #1

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	L	R	L	T	T	R	L	T
Maximum Queue (ft)	100	92	53	74	94	77	45	170	192	80	63	58
Average Queue (ft)	50	58	26	41	59	49	19	102	126	13	34	21
95th Queue (ft)	104	99	54	77	96	84	47	186	214	57	70	61
Link Distance (ft)			862			596		625	625			486
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	270	270		200	200		410			100	100	
Storage Blk Time (%)									9		0	0
Queuing Penalty (veh)									4		0	0

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #1

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	71	24
Average Queue (ft)	34	6
95th Queue (ft)	78	25
Link Distance (ft)	486	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		110
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #2

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	L	R	L	T	T	R	L	T
Maximum Queue (ft)	93	112	55	84	96	105	49	184	229	46	84	92
Average Queue (ft)	53	66	28	45	58	64	24	114	142	12	47	41
95th Queue (ft)	92	116	56	89	98	115	54	205	246	56	97	102
Link Distance (ft)			862			596		625	625			486
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	270	270		200	200		410			100	100	
Storage Blk Time (%)									11		2	1
Queuing Penalty (veh)									5		6	0

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #2

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	105	25
Average Queue (ft)	51	7
95th Queue (ft)	121	26
Link Distance (ft)	486	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		110
Storage Blk Time (%)	1	
Queuing Penalty (veh)	1	

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #3

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	L	R	L	T	T	R	L	T
Maximum Queue (ft)	85	105	41	68	80	88	46	161	224	29	69	76
Average Queue (ft)	45	65	23	41	55	52	23	91	116	8	36	29
95th Queue (ft)	89	111	43	73	89	95	50	175	223	29	76	76
Link Distance (ft)			862			596		625	625			486
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	270	270		200	200		410			100	100	
Storage Blk Time (%)									8		0	0
Queuing Penalty (veh)									3		0	0

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #3

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	95	27
Average Queue (ft)	34	9
95th Queue (ft)	87	29
Link Distance (ft)	486	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		110
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #4

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	L	R	L	T	T	R	L	T
Maximum Queue (ft)	79	101	44	87	103	95	48	164	193	30	73	63
Average Queue (ft)	44	61	22	38	57	53	19	90	108	8	35	21
95th Queue (ft)	81	104	49	80	98	104	49	170	194	29	73	64
Link Distance (ft)			862			596		625	625			486
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	270	270		200	200		410			100	100	
Storage Blk Time (%)									7		1	0
Queuing Penalty (veh)									3		3	0

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #4

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	76	28
Average Queue (ft)	35	8
95th Queue (ft)	78	28
Link Distance (ft)	486	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		110
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 3: SR-248 & Round Valley Drive/Main Access, All Intervals

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	R	L	L	R	L	T	T	R	L	T
Maximum Queue (ft)	113	125	69	100	114	115	61	207	259	86	98	111
Average Queue (ft)	48	62	25	41	57	54	21	99	123	10	38	28
95th Queue (ft)	92	108	51	80	96	101	51	186	222	45	80	78
Link Distance (ft)			862			596		625	625			486
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	270	270		200	200		410			100	100	
Storage Blk Time (%)									9		1	0
Queuing Penalty (veh)									4		2	0

Intersection: 3: SR-248 & Round Valley Drive/Main Access, All Intervals

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	126	30
Average Queue (ft)	39	8
95th Queue (ft)	94	27
Link Distance (ft)	486	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		110
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 4: SR-248 & North Truck Access, Interval #1

Movement	WB
Directions Served	R
Maximum Queue (ft)	37
Average Queue (ft)	9
95th Queue (ft)	42
Link Distance (ft)	486
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: SR-248 & North Truck Access, Interval #2

Movement	WB	SB	SB
Directions Served	R	T	T
Maximum Queue (ft)	48	7	2
Average Queue (ft)	11	1	0
95th Queue (ft)	51	14	3
Link Distance (ft)	486	758	758
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: SR-248 & North Truck Access, Interval #3

Movement	WB
Directions Served	R
Maximum Queue (ft)	28
Average Queue (ft)	8
95th Queue (ft)	39
Link Distance (ft)	486
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: SR-248 & North Truck Access, Interval #4

Movement	WB
Directions Served	R
Maximum Queue (ft)	32
Average Queue (ft)	5
95th Queue (ft)	32
Link Distance (ft)	486
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: SR-248 & North Truck Access, All Intervals

Movement	WB	SB	SB
Directions Served	R	T	T
Maximum Queue (ft)	67	7	2
Average Queue (ft)	8	0	0
95th Queue (ft)	41	7	2
Link Distance (ft)	486	758	758
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: SB Ramps & SR-248, Interval #1

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	243	209	58	60	84	347
Average Queue (ft)	129	110	27	26	42	253
95th Queue (ft)	244	204	61	64	89	384
Link Distance (ft)	758	758		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						5
Queuing Penalty (veh)						11

Intersection: 5: SB Ramps & SR-248, Interval #2

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	278	224	48	76	87	373
Average Queue (ft)	154	123	24	38	50	264
95th Queue (ft)	279	224	52	81	93	411
Link Distance (ft)	758	758		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						6
Queuing Penalty (veh)						17

Intersection: 5: SB Ramps & SR-248, Interval #3

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	L	T	T	LT	R
Maximum Queue (ft)	240	182	53	61	67	335	57
Average Queue (ft)	136	104	22	31	37	235	0
95th Queue (ft)	251	182	55	73	81	387	0
Link Distance (ft)	758	758		585	585	1078	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200				310
Storage Blk Time (%)						4	
Queuing Penalty (veh)						9	

Intersection: 5: SB Ramps & SR-248, Interval #4

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	L	T	T	LT	R
Maximum Queue (ft)	227	196	50	71	89	389	57
Average Queue (ft)	133	109	22	31	43	255	8
95th Queue (ft)	231	198	55	75	94	430	120
Link Distance (ft)	758	758		585	585	1078	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200				310
Storage Blk Time (%)						8	
Queuing Penalty (veh)						18	

Intersection: 5: SB Ramps & SR-248, All Intervals

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	L	T	T	LT	R
Maximum Queue (ft)	322	257	68	86	101	448	57
Average Queue (ft)	138	111	24	32	43	252	2
95th Queue (ft)	253	203	56	74	90	405	58
Link Distance (ft)	758	758		585	585	1078	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200				310
Storage Blk Time (%)						6	
Queuing Penalty (veh)						14	

Intersection: 6: NB Ramps & SR-248, Interval #1

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	228	137	126	55	67	220	40
Average Queue (ft)	138	66	83	31	41	147	8
95th Queue (ft)	246	149	131	60	77	240	40
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	1					0	
Queuing Penalty (veh)	4					0	

Intersection: 6: NB Ramps & SR-248, Interval #2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	273	148	132	69	71	254	16
Average Queue (ft)	163	69	88	36	39	166	4
95th Queue (ft)	275	155	139	73	79	272	27
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	2					0	
Queuing Penalty (veh)	8					0	

Intersection: 6: NB Ramps & SR-248, Interval #3

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	286	178	133	60	73	232	32
Average Queue (ft)	157	70	88	34	39	153	6
95th Queue (ft)	267	155	149	70	77	239	34
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	2	0				0	
Queuing Penalty (veh)	7	0				0	

Intersection: 6: NB Ramps & SR-248, Interval #4

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	235	108	137	54	67	226	22
Average Queue (ft)	147	62	87	25	35	141	3
95th Queue (ft)	250	114	144	60	78	231	24
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	2						
Queuing Penalty (veh)	6						

Intersection: 6: NB Ramps & SR-248, All Intervals

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	310	236	166	77	85	272	57
Average Queue (ft)	151	67	87	31	39	152	5
95th Queue (ft)	261	144	141	67	78	247	32
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	2	0				0	
Queuing Penalty (veh)	6	0				0	

Network Summary

Network wide Queuing Penalty, Interval #1: 20
Network wide Queuing Penalty, Interval #2: 37
Network wide Queuing Penalty, Interval #3: 20
Network wide Queuing Penalty, Interval #4: 31
Network wide Queuing Penalty, All Intervals: 27

HALES ENGINEERING
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SimTraffic LOS Report

Project: **PC - Raleigh Studios TIS**
Analysis Period: ***Future 2020 Conditions***
Time Period: ***p.m. Peak Hour*** **Project #:** ***UT12-336***

Intersection: **SR-248 & Richardson Flat Rd**
Type: **Signalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	10	10	98	34.4	*C*
	T	1,425	1,435	101	22.2	*C*
	R	380	376	99	16.3	*B*
	Subtotal	1,815	1,821	100	21.0	*C*
SB	L	65	57	88	144.6	*F*
	T	1,001	1,010	101	11.1	*B*
	R	5	5	100	8.6	*A*
	Subtotal	1,071	1,072	100	18.2	*B*
EB	L	5	5	100	30.6	*C*
	R	5	5	100	6.4	*A*
	Subtotal	10	10	100	18.5	*B*
WB	L	260	251	97	47.5	*D*
	R	340	340	100	29.4	*C*
	Subtotal	600	591	99	37.1	*D*
Total		3,496	3,494	100	23.0	*C*

Intersection: **SR-248 & Round Valley Drive**
Type: **Signalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	190	184	97	31.3	*C*
	T	1,580	1,596	101	8.3	*A*
	Subtotal	1,770	1,780	101	10.7	*B*
SB	T	730	734	101	7.4	*A*
	R	230	237	103	3.2	*A*
	Subtotal	960	971	101	6.4	*A*
EB	L	420	416	99	39.6	*D*
	R	340	338	99	14.0	*B*
	Subtotal	760	754	99	28.1	*C*
Total		3,490	3,505	100	13.3	*B*

HALES ENGINEERING
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SimTraffic LOS Report

Project: PC - Raleigh Studios TIS
Analysis Period: *Future 2020 Conditions*
Time Period: *p.m. Peak Hour* **Project #:** *UT12-336*

Intersection: SB Ramps & SR-248
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
SB	L	410	417	102	55.8	*E*
	R	420	420	100	12.2	*B*
	Subtotal	830	837	101	33.9	*C*
EB	T	1,280	1,277	100	33.6	*C*
	R	720	723	100	7.5	*A*
	Subtotal	2,000	2,000	100	24.2	*C*
WB	L	50	51	101	34.3	*C*
	T	540	550	102	5.5	*A*
	Subtotal	590	601	102	7.9	*A*
Total		3,420	3,438	101	23.8	*C*

Intersection: NB Ramps & SR-248
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	320	325	101	76.8	*E*
	R	40	42	105	8.7	*A*
	Subtotal	360	367	102	69.0	*E*
EB	L	840	828	99	35.7	*D*
	T	850	857	101	10.5	*B*
	Subtotal	1,690	1,685	100	22.9	*C*
WB	T	270	277	103	40.6	*D*
	R	290	301	104	9.6	*A*
	Subtotal	560	578	103	24.5	*C*
Total		2,610	2,630	101	29.8	*C*

1: SR-248 & Richardson Flat Rd Performance by movement Interval #1 4:45

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.8	0.6	0.0	2.1	0.4	0.4	0.7	0.0	5.0
Total Del/Veh (s)	33.5	11.6	43.7	26.1	27.5	20.7	16.0	90.7	9.8	3.3	20.5
Speed Delay (hr)	0.0	0.0	0.7	0.5	0.0	1.5	0.2	0.4	0.7	0.0	4.0
Speed Del/Veh (s)	33.4	11.5	38.6	24.0	19.1	14.4	6.7	90.7	9.8	3.3	16.2
Vehicles Entered	1	1	61	79	3	346	96	14	241	1	843
Vehicles Exited	1	1	61	77	2	349	95	13	247	1	847
Hourly Exit Rate	4	4	244	308	8	1396	380	52	988	4	3388
Input Volume	5	5	252	330	10	1384	369	63	972	5	3395
% of Volume	80	80	97	93	80	101	103	83	102	80	100

1: SR-248 & Richardson Flat Rd Performance by movement Interval #2 5:00

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	1.0	0.8	0.0	2.9	0.5	0.7	0.9	0.0	6.9
Total Del/Veh (s)	31.0	5.7	51.0	31.3	41.9	25.8	18.9	139.0	12.1	8.2	25.7
Speed Delay (hr)	0.0	0.0	0.9	0.8	0.0	1.9	0.2	0.7	0.9	0.0	5.5
Speed Del/Veh (s)	30.9	5.6	45.3	28.6	28.1	17.5	8.0	139.0	12.1	8.2	20.4
Vehicles Entered	1	1	70	91	3	384	98	17	269	2	936
Vehicles Exited	1	1	69	91	3	380	98	15	259	2	919
Hourly Exit Rate	4	4	276	364	12	1520	392	60	1036	8	3676
Input Volume	5	5	283	370	11	1549	413	71	1087	5	3799
% of Volume	80	80	98	98	109	98	95	85	95	160	97

1: SR-248 & Richardson Flat Rd Performance by movement Interval #3 5:15

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.7	0.7	0.0	2.0	0.4	0.7	0.8	0.0	5.3
Total Del/Veh (s)	31.7	6.3	43.2	29.9	27.8	19.5	14.1	134.6	10.6	6.5	21.3
Speed Delay (hr)	0.0	0.0	0.7	0.7	0.0	1.5	0.2	0.7	0.8	0.0	4.5
Speed Del/Veh (s)	31.6	6.2	38.3	27.9	19.4	15.1	6.7	134.6	10.6	6.5	18.2
Vehicles Entered	2	1	58	84	3	347	90	14	250	2	851
Vehicles Exited	2	1	58	84	3	354	91	14	260	2	869
Hourly Exit Rate	8	4	232	336	12	1416	364	56	1040	8	3476
Input Volume	5	5	252	330	10	1384	369	63	972	5	3395
% of Volume	160	80	92	102	120	102	99	89	107	160	102

1: SR-248 & Richardson Flat Rd Performance by movement Interval #4 5:30

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.8	0.6	0.0	2.0	0.4	0.7	0.8	0.0	5.3
Total Del/Veh (s)	25.0	4.3	44.3	25.5	26.5	19.6	14.0	140.5	10.8	10.1	21.2
Speed Delay (hr)	0.0	0.0	0.7	0.6	0.0	1.5	0.2	0.7	0.8	0.0	4.5
Speed Del/Veh (s)	24.9	4.2	39.1	23.6	20.1	15.2	6.7	140.5	10.8	10.1	18.0
Vehicles Entered	1	2	64	86	2	355	92	14	249	1	866
Vehicles Exited	1	2	63	88	2	351	92	14	243	1	857
Hourly Exit Rate	4	8	252	352	8	1404	368	56	972	4	3428
Input Volume	5	5	252	330	10	1384	369	63	972	5	3395
% of Volume	80	160	100	107	80	101	100	89	100	80	101

1: SR-248 & Richardson Flat Rd Performance by movement Entire Run

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	3.4	2.8	0.1	8.9	1.7	2.4	3.1	0.0	22.5
Total Del/Veh (s)	30.6	6.4	47.5	29.4	34.4	22.2	16.3	144.6	11.1	8.6	23.0
Speed Delay (hr)	0.0	0.0	3.0	2.6	0.1	6.5	0.8	2.4	3.1	0.0	18.5
Speed Del/Veh (s)	30.5	6.4	42.1	27.1	24.0	16.1	7.3	144.6	11.1	8.6	18.9
Vehicles Entered	5	5	253	340	10	1432	377	58	1008	5	3493
Vehicles Exited	5	5	251	340	10	1435	376	57	1010	5	3494
Hourly Exit Rate	5	5	251	340	10	1435	376	57	1010	5	3494
Input Volume	5	5	260	340	10	1425	380	65	1001	5	3496
% of Volume	100	100	97	100	98	101	99	88	101	100	100

3: SR-248 & Round Valley Drive Performance by movement Interval #1 4:45

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	1.2	0.3	0.3	0.8	0.4	0.0	3.1
Total Del/Veh (s)	38.6	12.6	25.1	8.0	7.6	3.0	13.0
Speed Delay (hr)	1.1	0.3	0.3	0.8	0.4	0.0	3.0
Speed Del/Veh (s)	36.7	11.8	25.1	8.0	7.6	3.0	12.7
Vehicles Entered	104	82	43	374	170	53	826
Vehicles Exited	107	81	43	375	175	55	836
Hourly Exit Rate	428	324	172	1500	700	220	3344
Input Volume	408	330	184	1535	709	223	3389
% of Volume	105	98	93	98	99	99	99

3: SR-248 & Round Valley Drive Performance by movement Interval #2 5:00

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	1.3	0.4	0.5	1.0	0.4	0.1	3.6
Total Del/Veh (s)	38.8	15.4	35.7	8.0	7.1	3.2	13.5
Speed Delay (hr)	1.2	0.4	0.5	1.0	0.4	0.1	3.5
Speed Del/Veh (s)	36.9	14.6	35.7	8.0	7.1	3.2	13.2
Vehicles Entered	111	92	52	427	200	64	946
Vehicles Exited	106	91	49	425	196	63	930
Hourly Exit Rate	424	364	196	1700	784	252	3720
Input Volume	457	370	207	1717	794	250	3795
% of Volume	93	98	95	99	99	101	98

3: SR-248 & Round Valley Drive Performance by movement Interval #3 5:15

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	1.1	0.3	0.4	1.1	0.4	0.1	3.4
Total Del/Veh (s)	36.4	12.7	32.0	9.5	8.0	3.3	13.7
Speed Delay (hr)	1.1	0.3	0.4	1.1	0.4	0.1	3.3
Speed Del/Veh (s)	34.5	11.9	32.0	9.5	8.0	3.3	13.4
Vehicles Entered	102	83	44	391	182	57	859
Vehicles Exited	110	85	45	388	182	58	868
Hourly Exit Rate	440	340	180	1552	728	232	3472
Input Volume	408	330	184	1535	709	223	3389
% of Volume	108	103	98	101	103	104	102

3: SR-248 & Round Valley Drive Performance by movement Interval #4 5:30

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	1.1	0.3	0.3	0.8	0.3	0.1	2.9
Total Del/Veh (s)	37.8	13.2	24.8	7.1	6.6	3.0	11.8
Speed Delay (hr)	1.0	0.3	0.3	0.8	0.3	0.1	2.9
Speed Del/Veh (s)	35.7	12.4	24.8	7.1	6.6	3.0	11.5
Vehicles Entered	100	82	45	402	180	63	872
Vehicles Exited	93	81	46	408	181	62	871
Hourly Exit Rate	372	324	184	1632	724	248	3484
Input Volume	408	330	184	1535	709	223	3389
% of Volume	91	98	100	106	102	111	103

3: SR-248 & Round Valley Drive Performance by movement Entire Run

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	4.7	1.3	1.6	3.7	1.5	0.2	13.0
Total Del/Veh (s)	39.6	14.0	31.3	8.3	7.4	3.2	13.3
Speed Delay (hr)	4.4	1.3	1.6	3.7	1.5	0.2	12.7
Speed Del/Veh (s)	37.6	13.2	31.3	8.3	7.4	3.2	13.0
Vehicles Entered	417	339	183	1595	731	237	3502
Vehicles Exited	416	338	184	1596	734	237	3505
Hourly Exit Rate	416	338	184	1596	734	237	3505
Input Volume	420	340	190	1580	730	230	3490
% of Volume	99	99	97	101	101	103	100

5: SB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.3	0.3	0.1	0.2	1.4	0.3	3.6
Total Del/Veh (s)	15.4	6.4	30.7	5.9	43.6	10.8	15.5
Speed Delay (hr)	1.3	0.3	0.1	0.2	1.2	0.1	3.3
Speed Del/Veh (s)	15.4	6.4	30.7	5.9	39.1	3.7	14.0
Vehicles Entered	302	179	12	128	103	100	824
Vehicles Exited	295	180	12	124	108	99	818
Hourly Exit Rate	1180	720	48	496	432	396	3272
Input Volume	1243	699	49	524	398	408	3321
% of Volume	95	103	98	95	109	97	99

5: SB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	2.9	0.4	0.1	0.2	2.0	0.5	6.0
Total Del/Veh (s)	29.4	7.2	34.4	5.2	61.2	13.9	23.1
Speed Delay (hr)	2.9	0.4	0.1	0.2	1.7	0.2	5.5
Speed Del/Veh (s)	29.4	7.2	34.4	5.2	54.8	4.6	21.1
Vehicles Entered	340	188	12	144	109	118	911
Vehicles Exited	334	186	12	148	102	119	901
Hourly Exit Rate	1336	744	48	592	408	476	3604
Input Volume	1392	783	54	587	446	457	3719
% of Volume	96	95	89	101	91	104	97

5: SB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	4.4	0.4	0.1	0.2	1.9	0.3	7.4
Total Del/Veh (s)	46.2	8.5	32.0	5.3	59.8	11.8	29.7
Speed Delay (hr)	4.4	0.4	0.1	0.2	1.8	0.1	7.1
Speed Del/Veh (s)	46.2	8.5	32.0	5.3	56.0	4.6	28.4
Vehicles Entered	323	179	13	141	103	99	858
Vehicles Exited	312	180	13	135	111	99	850
Hourly Exit Rate	1248	720	52	540	444	396	3400
Input Volume	1243	699	49	524	398	408	3321
% of Volume	100	103	106	103	112	97	102

5: SB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	3.5	0.4	0.1	0.2	1.4	0.3	5.9
Total Del/Veh (s)	36.1	7.6	32.6	5.1	46.4	10.8	23.6
Speed Delay (hr)	3.5	0.4	0.1	0.2	1.2	0.1	5.6
Speed Del/Veh (s)	36.1	7.6	32.6	5.1	42.0	3.8	22.2
Vehicles Entered	320	179	14	137	102	103	855
Vehicles Exited	336	177	13	144	96	103	869
Hourly Exit Rate	1344	708	52	576	384	412	3476
Input Volume	1243	699	49	524	398	408	3321
% of Volume	108	101	106	110	96	101	105

5: SB Ramps & SR-248 Performance by movement Entire Run

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	12.0	1.5	0.5	0.8	6.6	1.4	23.0
Total Del/Veh (s)	33.6	7.5	34.3	5.5	55.8	12.2	23.8
Speed Delay (hr)	12.0	1.5	0.5	0.8	6.0	0.5	21.4
Speed Del/Veh (s)	33.6	7.5	34.3	5.5	50.8	4.3	22.2
Vehicles Entered	1284	724	52	550	418	421	3449
Vehicles Exited	1277	723	51	550	417	420	3438
Hourly Exit Rate	1277	723	51	550	417	420	3438
Input Volume	1280	720	50	540	410	420	3420
% of Volume	100	100	101	102	102	100	101

6: NB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.4	0.6	0.7	0.2	1.1	0.0	4.0
Total Del/Veh (s)	24.0	9.5	37.1	9.1	49.8	6.9	22.1
Speed Delay (hr)	1.4	0.6	0.7	0.1	1.1	0.0	3.9
Speed Del/Veh (s)	24.0	9.5	35.7	4.1	49.3	2.8	21.2
Vehicles Entered	197	206	65	72	78	11	629
Vehicles Exited	201	205	68	72	72	11	629
Hourly Exit Rate	804	820	272	288	288	44	2516
Input Volume	816	825	262	282	311	39	2535
% of Volume	99	99	104	102	93	113	99

6: NB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	2.2	0.7	0.8	0.2	2.1	0.0	6.1
Total Del/Veh (s)	36.1	11.1	38.0	9.6	77.1	10.7	30.5
Speed Delay (hr)	2.2	0.7	0.8	0.1	2.1	0.0	5.9
Speed Del/Veh (s)	36.1	11.1	36.4	4.1	76.6	6.5	29.5
Vehicles Entered	215	222	74	82	86	11	690
Vehicles Exited	204	218	69	82	87	11	671
Hourly Exit Rate	816	872	276	328	348	44	2684
Input Volume	913	925	293	315	348	43	2837
% of Volume	89	94	94	104	100	102	95

6: NB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	2.5	0.6	0.9	0.2	1.8	0.0	6.1
Total Del/Veh (s)	39.8	10.0	41.4	9.5	72.3	7.2	30.9
Speed Delay (hr)	2.5	0.6	0.9	0.1	1.8	0.0	5.9
Speed Del/Veh (s)	39.8	10.0	39.9	4.3	71.7	3.2	30.0
Vehicles Entered	207	216	70	79	82	11	665
Vehicles Exited	215	220	75	79	80	11	680
Hourly Exit Rate	860	880	300	316	320	44	2720
Input Volume	816	825	262	282	311	39	2535
% of Volume	105	107	115	112	103	113	107

6: NB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	2.3	0.7	0.8	0.2	2.1	0.0	6.0
Total Del/Veh (s)	36.5	10.8	39.7	9.1	77.8	8.8	31.4
Speed Delay (hr)	2.3	0.7	0.7	0.1	2.1	0.0	5.8
Speed Del/Veh (s)	36.5	10.8	38.4	4.0	77.3	4.6	30.6
Vehicles Entered	217	215	67	66	84	8	657
Vehicles Exited	207	213	65	68	86	8	647
Hourly Exit Rate	828	852	260	272	344	32	2588
Input Volume	816	825	262	282	311	39	2535
% of Volume	101	103	99	96	111	82	102

6: NB Ramps & SR-248 Performance by movement Entire Run

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	8.4	2.5	3.2	0.8	7.1	0.1	22.1
Total Del/Veh (s)	35.7	10.5	40.6	9.6	76.8	8.7	29.8
Speed Delay (hr)	8.4	2.5	3.1	0.4	7.1	0.1	21.5
Speed Del/Veh (s)	35.7	10.5	39.1	4.2	76.2	4.4	28.9
Vehicles Entered	835	859	276	300	330	42	2642
Vehicles Exited	828	857	277	301	325	42	2630
Hourly Exit Rate	828	857	277	301	325	42	2630
Input Volume	840	850	270	290	320	40	2610
% of Volume	99	101	103	104	101	105	101

Total Network Performance By Interval

Interval Start	4:45	5:00	5:15	5:30	All
Total Delay (hr)	17.9	25.4	25.1	22.7	91.2
Total Del/Veh (s)	46.9	60.9	62.3	58.1	63.9
Speed Delay (hr)	16.3	23.2	23.8	21.4	84.6
Speed Del/Veh (s)	42.7	55.6	58.9	54.7	59.3
Vehicles Entered	1202	1331	1214	1214	4966
Vehicles Exited	1212	1261	1263	1208	4945
Hourly Exit Rate	4848	5044	5052	4832	4945
Input Volume	23064	25819	23064	23064	23753
% of Volume	21	20	22	21	21

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #1

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	30	220	217	20	266	278	131	108	182	204
Average Queue (ft)	8	152	131	6	156	155	49	62	88	111
95th Queue (ft)	29	237	234	23	263	276	123	123	174	199
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		3	3		5	3		0	1	
Queuing Penalty (veh)		11	7		0	10		1	1	

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #2

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	23	255	327	51	317	319	228	144	224	250
Average Queue (ft)	6	178	171	12	208	197	72	90	125	150
95th Queue (ft)	25	284	342	67	351	342	209	196	243	257
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)			1							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		8	6		8	5		10	1	
Queuing Penalty (veh)		30	18		1	20		55	1	

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #3

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	31	226	254	24	248	248	127	124	202	218
Average Queue (ft)	10	142	157	8	165	162	45	82	108	130
95th Queue (ft)	35	236	288	28	280	270	119	204	253	263
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		3	4		5	2		13	1	
Queuing Penalty (veh)		10	11		1	7		64	0	

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #4

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	24	228	223	29	289	253	83	152	199	229
Average Queue (ft)	7	152	143	6	177	166	42	86	107	136
95th Queue (ft)	26	230	235	25	294	266	100	189	219	250
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		4	1		5	2		6	1	
Queuing Penalty (veh)		12	4		1	8		31	0	

Intersection: 1: SR-248 & Richardson Flat Rd, All Intervals

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	35	283	365	56	352	344	277	169	252	285
Average Queue (ft)	8	156	150	8	176	170	52	80	107	132
95th Queue (ft)	29	250	281	40	302	293	145	182	226	246
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)			0							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		5	4		6	3		7	1	
Queuing Penalty (veh)		16	10		1	11		38	0	

Intersection: 3: SR-248 & Round Valley Drive, Interval #1

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	181	188	150	122	205	224	130	131	66
Average Queue (ft)	117	131	88	76	108	127	60	65	39
95th Queue (ft)	192	202	154	133	219	256	118	126	72
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)	0	0						2	
Queuing Penalty (veh)	1	0						4	

Intersection: 3: SR-248 & Round Valley Drive, Interval #2

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	178	196	179	199	200	241	118	118	75
Average Queue (ft)	116	143	110	104	112	137	68	77	45
95th Queue (ft)	190	213	196	210	206	247	118	123	81
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)								2	0
Queuing Penalty (veh)								4	0

Intersection: 3: SR-248 & Round Valley Drive, Interval #3

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	179	184	181	195	188	239	108	116	68
Average Queue (ft)	106	122	94	94	119	156	64	70	43
95th Queue (ft)	173	179	176	210	216	262	110	122	79
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)								1	0
Queuing Penalty (veh)								3	0

Intersection: 3: SR-248 & Round Valley Drive, Interval #4

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	166	186	169	136	183	222	111	110	75
Average Queue (ft)	104	118	97	77	102	130	63	68	44
95th Queue (ft)	169	192	171	140	191	228	119	121	81
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)								1	0
Queuing Penalty (veh)								3	0

Intersection: 3: SR-248 & Round Valley Drive, All Intervals

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	213	216	224	218	268	307	150	151	93
Average Queue (ft)	111	129	97	87	110	138	64	70	43
95th Queue (ft)	182	199	176	179	209	250	117	124	79
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)	0	0						1	0
Queuing Penalty (veh)	0	0						3	0

Intersection: 5: SB Ramps & SR-248, Interval #1

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	315	248	73	80	91	387
Average Queue (ft)	202	149	36	29	41	252
95th Queue (ft)	329	259	78	85	101	381
Link Distance (ft)	760	760		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						4
Queuing Penalty (veh)						17

Intersection: 5: SB Ramps & SR-248, Interval #2

Movement	EB	EB	B4	B4	WB	WB	WB	SB	SB
Directions Served	T	T	T	T	L	T	T	LT	R
Maximum Queue (ft)	562	488	39	22	64	50	67	455	114
Average Queue (ft)	361	272	8	3	36	25	33	315	16
95th Queue (ft)	732	608	77	45	77	57	68	515	172
Link Distance (ft)	760	760	477	477		585	585	1078	
Upstream Blk Time (%)	2	0							
Queuing Penalty (veh)	22	1							
Storage Bay Dist (ft)					200				310
Storage Blk Time (%)		0						14	
Queuing Penalty (veh)		2						62	

Intersection: 5: SB Ramps & SR-248, Interval #3

Movement	EB	EB	EB	B4	B4	WB	WB	WB	SB	SB
Directions Served	T	T	R	T	T	L	T	T	LT	R
Maximum Queue (ft)	636	595	57	176	169	79	42	54	480	170
Average Queue (ft)	548	440	8	83	62	41	20	28	333	41
95th Queue (ft)	1005	899	120	311	269	89	49	59	589	282
Link Distance (ft)	760	760		477	477		585	585	1078	
Upstream Blk Time (%)	12	2		0	0					
Queuing Penalty (veh)	120	19		3	2					
Storage Bay Dist (ft)			470			200				310
Storage Blk Time (%)		0							16	
Queuing Penalty (veh)		3							66	

Intersection: 5: SB Ramps & SR-248, Interval #4

Movement	EB	EB	B4	B4	WB	WB	WB	SB
Directions Served	T	T	T	T	L	T	T	LT
Maximum Queue (ft)	595	527	133	119	83	46	59	386
Average Queue (ft)	456	361	55	29	42	22	31	250
95th Queue (ft)	872	773	249	187	81	58	71	384
Link Distance (ft)	760	760	477	477		585	585	1078
Upstream Blk Time (%)	7	1						
Queuing Penalty (veh)	69	11						
Storage Bay Dist (ft)					200			
Storage Blk Time (%)		0						4
Queuing Penalty (veh)		2						17

Intersection: 5: SB Ramps & SR-248, All Intervals

Movement	EB	EB	EB	B4	B4	WB	WB	WB	SB	SB
Directions Served	T	T	R	T	T	L	T	T	LT	R
Maximum Queue (ft)	685	636	57	197	195	97	83	104	549	227
Average Queue (ft)	392	306	2	37	24	39	24	33	288	14
95th Queue (ft)	814	703	58	200	162	82	64	77	484	160
Link Distance (ft)	760	760		477	477		585	585	1078	
Upstream Blk Time (%)	5	1		0	0					
Queuing Penalty (veh)	53	8		1	1					
Storage Bay Dist (ft)			470			200				310
Storage Blk Time (%)		0							9	
Queuing Penalty (veh)		2							40	

Intersection: 6: NB Ramps & SR-248, Interval #1

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	332	523	281	122	131	323	27
Average Queue (ft)	289	272	133	69	87	208	7
95th Queue (ft)	393	636	313	130	144	337	37
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)		1					
Queuing Penalty (veh)		10					
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	16					2	
Queuing Penalty (veh)	65					1	

Intersection: 6: NB Ramps & SR-248, Interval #2

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	339	597	329	126	127	432	90
Average Queue (ft)	320	475	152	80	93	313	14
95th Queue (ft)	391	794	368	131	143	590	136
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)		9	0				
Queuing Penalty (veh)		80	0				
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	32	0				20	
Queuing Penalty (veh)	146	0				9	

Intersection: 6: NB Ramps & SR-248, Interval #3

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	338	598	349	137	150	394	27
Average Queue (ft)	333	544	186	78	97	294	5
95th Queue (ft)	356	739	454	137	154	495	30
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)		14	0				
Queuing Penalty (veh)		117	0				
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	34					14	
Queuing Penalty (veh)	139					5	

Intersection: 6: NB Ramps & SR-248, Interval #4

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	338	601	305	109	127	470	78
Average Queue (ft)	319	476	152	69	87	308	19
95th Queue (ft)	388	808	354	119	141	603	173
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)		11					
Queuing Penalty (veh)		86					
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	32	0				21	
Queuing Penalty (veh)	131	0				8	

Intersection: 6: NB Ramps & SR-248, All Intervals

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	R
Maximum Queue (ft)	339	602	497	158	167	532	112
Average Queue (ft)	316	442	156	74	91	281	11
95th Queue (ft)	393	794	377	130	146	526	112
Link Distance (ft)		585	585	1198	1198	969	
Upstream Blk Time (%)		9	0				
Queuing Penalty (veh)		73	0				
Storage Bay Dist (ft)	200						310
Storage Blk Time (%)	28	0				14	
Queuing Penalty (veh)	120	0				6	

Network Summary

Network wide Queuing Penalty, Interval #1: 129
Network wide Queuing Penalty, Interval #2: 451
Network wide Queuing Penalty, Interval #3: 570
Network wide Queuing Penalty, Interval #4: 382
Network wide Queuing Penalty, All Intervals: 383

HALES ENGINEERING
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SimTraffic LOS Report

Project: **PC - Raleigh Studios TIS**
Analysis Period: ***Future 2020 Conditions - Mitigated***
Time Period: ***p.m. Peak Hour*** **Project #:** ***UT12-336***

Intersection: **SR-248 & Richardson Flat Rd**
Type: **Signalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	10	12	117	32.1	*C*
	T	1,425	1,436	101	22.0	*C*
	R	380	378	99	16.9	*B*
	Subtotal	1,815	1,826	101	21.0	*C*
SB	L	65	58	89	152.2	*F*
	T	1,001	1,017	102	7.6	*A*
	R	5	5	100	5.1	*A*
	Subtotal	1,071	1,080	101	15.4	*B*
EB	L	5	5	100	30.0	*C*
	R	5	5	100	7.8	*A*
	Subtotal	10	10	100	18.9	*B*
WB	L	260	253	97	47.1	*D*
	R	340	340	100	32.5	*C*
	Subtotal	600	593	99	38.7	*D*
Total		3,496	3,509	100	22.4	*C*

Intersection: **SR-248 & Round Valley Drive**
Type: **Signalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	190	186	98	34.5	*C*
	T	1,580	1,590	101	12.2	*B*
	Subtotal	1,770	1,776	100	14.5	*B*
SB	T	730	740	101	4.9	*A*
	R	230	238	104	2.5	*A*
	Subtotal	960	978	102	4.3	*A*
EB	L	420	421	100	38.0	*D*
	R	340	337	99	14.1	*B*
	Subtotal	760	758	100	27.4	*C*
Total		3,490	3,512	101	14.5	*B*

HALES ENGINEERING
innovative transportation solutions

SimTraffic LOS Report

Project: PC - Raleigh Studios TIS
Analysis Period: *Future 2020 Conditions - Mitigated*
Time Period: *p.m. Peak Hour* **Project #:** *UT12-336*

Intersection: SB Ramps & SR-248
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
SB	L	410	419	102	53.6	*D*
	R	420	421	100	12.4	*B*
	Subtotal	830	840	101	33.0	*C*
EB	T	1,280	1,277	100	15.1	*B*
	R	720	732	102	7.1	*A*
	Subtotal	2,000	2,009	100	12.2	*B*
WB	L	50	51	101	38.4	*D*
	T	540	555	103	10.4	*B*
	Subtotal	590	606	103	12.8	*B*
Total		3,420	3,455	101	17.4	*B*

Intersection: NB Ramps & SR-248
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	320	330	103	42.0	*D*
	R	40	43	108	7.1	*A*
	Subtotal	360	373	104	38.0	*D*
EB	L	840	838	100	29.2	*C*
	T	850	858	101	9.8	*A*
	Subtotal	1,690	1,696	100	19.4	*B*
WB	T	270	276	102	29.8	*C*
	R	290	298	103	14.2	*B*
	Subtotal	560	574	103	21.7	*C*
Total		2,610	2,643	101	22.5	*C*

1: SR-248 & Richardson Flat Rd Performance by movement Interval #1 4:45

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.8	0.7	0.0	2.1	0.5	0.5	0.5	0.0	5.1
Total Del/Veh (s)	43.0	7.2	43.5	29.1	27.4	21.0	16.1	113.1	7.3	3.0	20.7
Speed Delay (hr)	0.0	0.0	0.7	0.6	0.0	1.5	0.2	0.5	0.5	0.0	4.1
Speed Del/Veh (s)	42.9	7.1	38.4	26.9	16.6	15.1	7.3	113.1	7.3	3.0	16.7
Vehicles Entered	1	2	62	81	3	349	97	15	243	1	854
Vehicles Exited	1	2	63	81	3	346	96	14	244	1	851
Hourly Exit Rate	4	8	252	324	12	1384	384	56	976	4	3404
Input Volume	5	5	252	330	10	1384	369	63	972	5	3395
% of Volume	80	160	100	98	120	100	104	89	100	80	100

1: SR-248 & Richardson Flat Rd Performance by movement Interval #2 5:00

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	1.0	1.0	0.0	2.8	0.6	0.8	0.6	0.0	6.9
Total Del/Veh (s)	24.7	5.0	48.4	38.0	47.2	25.3	20.0	164.5	8.2	5.1	25.4
Speed Delay (hr)	0.0	0.0	0.9	0.9	0.0	1.9	0.2	0.8	0.6	0.0	5.4
Speed Del/Veh (s)	24.6	5.0	42.3	34.9	33.0	16.9	8.3	164.5	8.2	5.1	19.9
Vehicles Entered	1	1	69	91	3	386	97	16	275	2	941
Vehicles Exited	1	1	66	88	3	387	98	14	276	2	936
Hourly Exit Rate	4	4	264	352	12	1548	392	56	1104	8	3744
Input Volume	5	5	283	370	11	1549	413	71	1087	5	3799
% of Volume	80	80	93	95	109	100	95	79	102	160	99

1: SR-248 & Richardson Flat Rd Performance by movement Interval #3 5:15

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.8	0.7	0.0	1.9	0.4	0.6	0.5	0.0	4.9
Total Del/Veh (s)	30.1	12.1	42.6	29.1	30.4	19.0	14.3	129.0	6.8	4.1	20.0
Speed Delay (hr)	0.0	0.0	0.7	0.7	0.0	1.5	0.2	0.6	0.5	0.0	4.2
Speed Del/Veh (s)	30.0	12.0	38.0	27.2	22.7	14.8	7.0	129.0	6.8	4.1	17.0
Vehicles Entered	2	1	58	85	3	343	92	14	250	2	850
Vehicles Exited	2	1	61	86	3	346	93	17	250	2	861
Hourly Exit Rate	8	4	244	344	12	1384	372	68	1000	8	3444
Input Volume	5	5	252	330	10	1384	369	63	972	5	3395
% of Volume	160	80	97	104	120	100	101	108	103	160	101

1: SR-248 & Richardson Flat Rd Performance by movement Interval #4 5:30

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.8	0.7	0.0	2.1	0.4	0.6	0.5	0.0	5.1
Total Del/Veh (s)	22.3	7.6	41.8	27.5	35.2	20.1	14.7	136.0	7.6	3.8	20.4
Speed Delay (hr)	0.0	0.0	0.7	0.6	0.0	1.6	0.2	0.6	0.5	0.0	4.3
Speed Del/Veh (s)	22.3	7.5	36.6	25.4	27.2	15.7	7.5	136.0	7.6	3.8	17.2
Vehicles Entered	1	1	64	85	2	358	92	13	246	1	863
Vehicles Exited	1	1	63	85	2	357	92	13	247	1	862
Hourly Exit Rate	4	4	252	340	8	1428	368	52	988	4	3448
Input Volume	5	5	252	330	10	1384	369	63	972	5	3395
% of Volume	80	80	100	103	80	103	100	83	102	80	102

1: SR-248 & Richardson Flat Rd Performance by movement Entire Run

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	3.4	3.1	0.1	8.8	1.8	2.5	2.2	0.0	22.0
Total Del/Veh (s)	30.0	7.8	47.1	32.5	32.1	22.0	16.9	152.2	7.6	5.1	22.4
Speed Delay (hr)	0.0	0.0	3.0	2.9	0.1	6.5	0.8	2.5	2.2	0.0	18.0
Speed Del/Veh (s)	29.9	7.7	41.4	30.0	22.6	16.1	7.8	152.2	7.6	5.1	18.3
Vehicles Entered	5	5	253	342	12	1436	378	58	1014	5	3508
Vehicles Exited	5	5	253	340	12	1436	378	58	1017	5	3509
Hourly Exit Rate	5	5	253	340	12	1436	378	58	1017	5	3509
Input Volume	5	5	260	340	10	1425	380	65	1001	5	3496
% of Volume	100	100	97	100	117	101	99	89	102	100	100

3: SR-248 & Round Valley Drive Performance by movement Interval #1 4:45

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	1.1	0.3	0.3	1.2	0.2	0.0	3.3
Total Del/Veh (s)	37.3	13.0	26.1	11.2	4.5	2.3	13.5
Speed Delay (hr)	1.1	0.3	0.3	1.2	0.2	0.0	3.2
Speed Del/Veh (s)	36.2	12.5	26.1	11.2	4.5	2.3	13.3
Vehicles Entered	103	81	44	382	179	56	845
Vehicles Exited	103	80	44	382	179	56	844
Hourly Exit Rate	412	320	176	1528	716	224	3376
Input Volume	408	330	184	1535	709	223	3389
% of Volume	101	97	96	100	101	100	100

3: SR-248 & Round Valley Drive Performance by movement Interval #2 5:00

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	1.2	0.4	0.6	1.6	0.3	0.0	4.1
Total Del/Veh (s)	36.5	14.6	37.9	13.0	5.8	2.6	15.2
Speed Delay (hr)	1.2	0.4	0.6	1.6	0.3	0.0	4.0
Speed Del/Veh (s)	35.4	14.1	37.9	13.0	5.8	2.6	15.0
Vehicles Entered	113	93	52	420	203	63	944
Vehicles Exited	113	93	49	414	202	62	933
Hourly Exit Rate	452	372	196	1656	808	248	3732
Input Volume	457	370	207	1717	794	250	3795
% of Volume	99	101	95	96	102	99	98

3: SR-248 & Round Valley Drive Performance by movement Interval #3 5:15

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	1.1	0.3	0.6	1.4	0.2	0.0	3.6
Total Del/Veh (s)	36.4	13.7	41.7	12.2	4.4	2.3	14.6
Speed Delay (hr)	1.0	0.3	0.6	1.4	0.2	0.0	3.6
Speed Del/Veh (s)	35.2	13.2	41.7	12.2	4.4	2.3	14.4
Vehicles Entered	102	82	44	395	181	56	860
Vehicles Exited	102	83	45	400	181	57	868
Hourly Exit Rate	408	332	180	1600	724	228	3472
Input Volume	408	330	184	1535	709	223	3389
% of Volume	100	101	98	104	102	102	102

3: SR-248 & Round Valley Drive Performance by movement Interval #4 5:30

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	1.1	0.3	0.3	1.3	0.2	0.0	3.3
Total Del/Veh (s)	36.4	12.9	24.4	11.1	4.7	2.7	13.2
Speed Delay (hr)	1.1	0.3	0.3	1.3	0.2	0.0	3.2
Speed Del/Veh (s)	35.2	12.3	24.4	11.1	4.7	2.7	13.0
Vehicles Entered	102	82	45	396	176	64	865
Vehicles Exited	103	82	47	393	178	64	867
Hourly Exit Rate	412	328	188	1572	712	256	3468
Input Volume	408	330	184	1535	709	223	3389
% of Volume	101	99	102	102	100	115	102

3: SR-248 & Round Valley Drive Performance by movement Entire Run

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	4.5	1.3	1.8	5.4	1.0	0.2	14.2
Total Del/Veh (s)	38.0	14.1	34.5	12.2	4.9	2.5	14.5
Speed Delay (hr)	4.4	1.3	1.8	5.4	1.0	0.2	14.1
Speed Del/Veh (s)	36.9	13.5	34.5	12.2	4.9	2.5	14.3
Vehicles Entered	420	338	186	1592	739	238	3513
Vehicles Exited	421	337	186	1590	740	238	3512
Hourly Exit Rate	421	337	186	1590	740	238	3512
Input Volume	420	340	190	1580	730	230	3490
% of Volume	100	99	98	101	101	104	101

5: SB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.1	0.4	0.1	0.4	1.4	0.3	3.7
Total Del/Veh (s)	12.8	6.9	35.2	9.7	46.9	10.7	15.4
Speed Delay (hr)	1.1	0.4	0.1	0.4	1.3	0.1	3.4
Speed Del/Veh (s)	12.8	6.9	35.2	9.7	42.6	3.6	14.0
Vehicles Entered	302	183	12	132	102	101	832
Vehicles Exited	304	184	12	132	102	100	834
Hourly Exit Rate	1216	736	48	528	408	400	3336
Input Volume	1243	699	49	524	398	408	3321
% of Volume	98	105	98	101	103	98	100

5: SB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.5	0.4	0.1	0.5	1.8	0.5	4.9
Total Del/Veh (s)	16.0	7.2	39.9	10.9	57.3	15.1	18.7
Speed Delay (hr)	1.5	0.4	0.1	0.5	1.6	0.1	4.3
Speed Del/Veh (s)	16.0	7.2	39.9	10.9	49.4	4.2	16.3
Vehicles Entered	334	191	12	147	110	122	916
Vehicles Exited	329	190	12	146	109	122	908
Hourly Exit Rate	1316	760	48	584	436	488	3632
Input Volume	1392	783	54	587	446	457	3719
% of Volume	95	97	89	99	98	107	98

5: SB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.4	0.4	0.1	0.4	1.6	0.3	4.3
Total Del/Veh (s)	15.2	7.0	33.8	9.9	52.3	11.4	17.1
Speed Delay (hr)	1.4	0.4	0.1	0.4	1.5	0.1	3.9
Speed Del/Veh (s)	15.2	7.0	33.8	9.9	48.7	4.2	15.9
Vehicles Entered	323	181	13	136	106	98	857
Vehicles Exited	328	181	12	138	106	98	863
Hourly Exit Rate	1312	724	48	552	424	392	3452
Input Volume	1243	699	49	524	398	408	3321
% of Volume	106	104	98	105	107	96	104

5: SB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.3	0.3	0.2	0.4	1.4	0.3	4.0
Total Del/Veh (s)	14.6	6.8	36.7	9.8	47.9	10.8	16.2
Speed Delay (hr)	1.3	0.3	0.2	0.4	1.3	0.1	3.7
Speed Del/Veh (s)	14.6	6.8	36.7	9.8	43.9	3.8	14.9
Vehicles Entered	318	178	15	138	101	101	851
Vehicles Exited	316	177	14	138	102	101	848
Hourly Exit Rate	1264	708	56	552	408	404	3392
Input Volume	1243	699	49	524	398	408	3321
% of Volume	102	101	114	105	103	99	102

5: SB Ramps & SR-248 Performance by movement Entire Run

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	5.4	1.4	0.6	1.6	6.3	1.5	16.8
Total Del/Veh (s)	15.1	7.1	38.4	10.4	53.6	12.4	17.4
Speed Delay (hr)	5.4	1.4	0.6	1.6	5.7	0.5	15.2
Speed Del/Veh (s)	15.1	7.1	38.4	10.4	48.4	4.1	15.7
Vehicles Entered	1278	733	52	554	418	422	3457
Vehicles Exited	1277	732	51	555	419	421	3455
Hourly Exit Rate	1277	732	51	555	419	421	3455
Input Volume	1280	720	50	540	410	420	3420
% of Volume	100	102	101	103	102	100	101

6: NB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.6	0.6	0.5	0.3	0.9	0.0	3.9
Total Del/Veh (s)	27.3	9.3	27.0	13.2	37.9	6.9	20.8
Speed Delay (hr)	1.6	0.6	0.5	0.2	0.9	0.0	3.7
Speed Del/Veh (s)	27.3	9.3	25.5	7.9	37.4	2.6	19.9
Vehicles Entered	198	208	65	75	79	11	636
Vehicles Exited	196	206	66	75	78	11	632
Hourly Exit Rate	784	824	264	300	312	44	2528
Input Volume	816	825	262	282	311	39	2535
% of Volume	96	100	101	106	100	113	100

6: NB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.7	0.6	0.7	0.3	1.1	0.0	4.4
Total Del/Veh (s)	26.5	9.3	30.5	14.7	45.3	7.4	22.1
Speed Delay (hr)	1.7	0.6	0.6	0.2	1.1	0.0	4.3
Speed Del/Veh (s)	26.5	9.3	28.9	9.2	44.7	3.2	21.2
Vehicles Entered	218	220	75	79	86	12	690
Vehicles Exited	218	221	74	78	85	12	688
Hourly Exit Rate	872	884	296	312	340	48	2752
Input Volume	913	925	293	315	348	43	2837
% of Volume	96	96	101	99	98	112	97

6: NB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.9	0.6	0.6	0.3	0.9	0.0	4.2
Total Del/Veh (s)	29.4	9.3	27.9	14.0	37.6	7.2	21.7
Speed Delay (hr)	1.9	0.6	0.5	0.2	0.9	0.0	4.1
Speed Del/Veh (s)	29.4	9.3	26.4	8.9	37.0	2.8	20.8
Vehicles Entered	212	222	68	77	81	11	671
Vehicles Exited	215	221	68	78	82	11	675
Hourly Exit Rate	860	884	272	312	328	44	2700
Input Volume	816	825	262	282	311	39	2535
% of Volume	105	107	104	111	105	113	107

6: NB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.7	0.6	0.6	0.3	1.0	0.0	4.2
Total Del/Veh (s)	27.6	10.0	29.4	13.6	41.0	6.9	22.2
Speed Delay (hr)	1.7	0.6	0.6	0.2	1.0	0.0	4.0
Speed Del/Veh (s)	27.6	10.0	28.2	8.5	40.4	2.6	21.4
Vehicles Entered	210	208	67	66	85	9	645
Vehicles Exited	210	210	68	67	85	9	649
Hourly Exit Rate	840	840	272	268	340	36	2596
Input Volume	816	825	262	282	311	39	2535
% of Volume	103	102	104	95	109	92	102

6: NB Ramps & SR-248 Performance by movement Entire Run

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	6.9	2.3	2.3	1.2	3.9	0.1	16.7
Total Del/Veh (s)	29.2	9.8	29.8	14.2	42.0	7.1	22.5
Speed Delay (hr)	6.9	2.3	2.2	0.7	3.8	0.0	16.1
Speed Del/Veh (s)	29.2	9.8	28.3	8.8	41.4	2.8	21.6
Vehicles Entered	838	858	276	298	331	42	2643
Vehicles Exited	838	858	276	298	330	43	2643
Hourly Exit Rate	838	858	276	298	330	43	2643
Input Volume	840	850	270	290	320	40	2610
% of Volume	100	101	102	103	103	108	101

Total Network Performance By Interval

Interval Start	4:45	5:00	5:15	5:30	All
Total Delay (hr)	18.5	23.6	19.9	19.3	81.3
Total Del/Veh (s)	48.3	56.2	50.4	50.0	56.8
Speed Delay (hr)	17.0	21.2	18.6	18.0	74.8
Speed Del/Veh (s)	44.3	50.6	47.2	46.6	52.3
Vehicles Entered	1212	1338	1209	1216	4977
Vehicles Exited	1206	1299	1249	1217	4972
Hourly Exit Rate	4824	5196	4996	4868	4972
Input Volume	23064	25819	23064	23064	23753
% of Volume	21	20	22	21	21

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #1

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	35	225	261	24	236	265	90	124	150	173
Average Queue (ft)	9	154	157	7	150	168	47	73	72	91
95th Queue (ft)	36	244	325	26	257	278	104	176	182	175
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)			1							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		5	5		3	3		5		
Queuing Penalty (veh)		16	13		0	9		25		

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #2

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	21	260	334	27	310	304	231	165	160	181
Average Queue (ft)	6	177	209	10	182	188	67	104	90	106
95th Queue (ft)	26	300	421	31	301	300	196	224	210	206
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)			2							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		9	10		5	5		14	0	
Queuing Penalty (veh)		32	30		1	20		74	0	

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #3

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	31	248	279	27	237	249	102	154	110	140
Average Queue (ft)	12	152	168	8	150	161	44	88	63	86
95th Queue (ft)	36	264	328	28	256	266	120	201	116	147
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)			0							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		5	5		3	2		11	0	
Queuing Penalty (veh)		16	12		0	9		52	0	

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #4

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	27	228	269	24	257	291	108	122	118	161
Average Queue (ft)	7	146	162	5	162	171	44	77	68	97
95th Queue (ft)	26	252	318	23	260	286	100	172	119	165
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)			0							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		4	5		4	3		4	0	
Queuing Penalty (veh)		15	12		0	11		22	0	

Intersection: 1: SR-248 & Richardson Flat Rd, All Intervals

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	42	285	389	30	322	340	257	197	221	238
Average Queue (ft)	8	157	174	8	161	172	51	85	73	95
95th Queue (ft)	31	267	353	27	271	284	137	195	164	176
Link Distance (ft)	329		560		1609	1609			1366	1366
Upstream Blk Time (%)			1							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		6	6		4	3		8	0	
Queuing Penalty (veh)		20	17		0	12		43	0	

Intersection: 3: SR-248 & Round Valley Drive, Interval #1

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	171	199	181	142	224	306	81	87	62
Average Queue (ft)	105	144	91	86	96	173	37	44	34
95th Queue (ft)	179	214	171	155	224	321	83	84	69
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)								0	
Queuing Penalty (veh)								1	

Intersection: 3: SR-248 & Round Valley Drive, Interval #2

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	151	206	185	202	249	348	116	127	93
Average Queue (ft)	99	152	109	117	120	206	54	60	37
95th Queue (ft)	168	226	195	210	280	395	127	130	105
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)		0			0			1	0
Queuing Penalty (veh)		0			0			3	0

Intersection: 3: SR-248 & Round Valley Drive, Interval #3

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	141	209	169	182	281	358	71	77	62
Average Queue (ft)	91	138	93	109	118	199	38	45	32
95th Queue (ft)	150	222	169	243	292	411	76	85	69
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)						0			
Queuing Penalty (veh)						1			
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)		0			0			0	
Queuing Penalty (veh)		0			0			0	

Intersection: 3: SR-248 & Round Valley Drive, Interval #4

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	170	209	159	144	216	316	85	84	69
Average Queue (ft)	102	132	90	85	103	176	42	44	40
95th Queue (ft)	178	211	168	150	228	330	91	90	75
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)	0	0						1	0
Queuing Penalty (veh)	0	0						1	0

Intersection: 3: SR-248 & Round Valley Drive, All Intervals

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	L	T	T	T	T	R
Maximum Queue (ft)	204	230	226	234	375	437	130	139	109
Average Queue (ft)	99	141	96	99	109	188	43	48	36
95th Queue (ft)	170	219	177	196	258	368	97	100	82
Link Distance (ft)		862	862		637	637	477	477	
Upstream Blk Time (%)						0			
Queuing Penalty (veh)						0			
Storage Bay Dist (ft)	270			410					110
Storage Blk Time (%)	0	0			0			1	0
Queuing Penalty (veh)	0	0			0			1	0

Intersection: 5: SB Ramps & SR-248, Interval #1

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	242	238	67	110	126	378
Average Queue (ft)	146	157	36	51	75	253
95th Queue (ft)	258	258	75	111	137	381
Link Distance (ft)	760	760		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						4
Queuing Penalty (veh)						18

Intersection: 5: SB Ramps & SR-248, Interval #2

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	294	324	68	118	149	417
Average Queue (ft)	170	199	40	68	86	302
95th Queue (ft)	311	340	85	128	154	458
Link Distance (ft)	760	760		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)				0		11
Queuing Penalty (veh)				0		49

Intersection: 5: SB Ramps & SR-248, Interval #3

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	L	T	T	LT	R
Maximum Queue (ft)	307	307	68	111	126	479	57
Average Queue (ft)	172	194	36	59	79	290	8
95th Queue (ft)	315	334	75	113	136	493	120
Link Distance (ft)	760	760		585	585	1078	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200				310
Storage Blk Time (%)						9	
Queuing Penalty (veh)						38	

Intersection: 5: SB Ramps & SR-248, Interval #4

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	L	T	T	LT	R
Maximum Queue (ft)	294	290	83	109	143	414	57
Average Queue (ft)	174	184	41	58	84	259	8
95th Queue (ft)	321	324	81	116	146	454	120
Link Distance (ft)	760	760		585	585	1078	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200				310
Storage Blk Time (%)						6	
Queuing Penalty (veh)						25	

Intersection: 5: SB Ramps & SR-248, All Intervals

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	L	T	T	LT	R
Maximum Queue (ft)	352	355	87	140	161	527	57
Average Queue (ft)	166	183	38	59	81	276	4
95th Queue (ft)	303	318	79	118	144	452	83
Link Distance (ft)	760	760		585	585	1078	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200				310
Storage Blk Time (%)				0		8	
Queuing Penalty (veh)				0		33	

Intersection: 6: NB Ramps & SR-248, Interval #1

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	264	322	128	164	94	111	164	276	32
Average Queue (ft)	178	190	75	105	56	73	88	176	5
95th Queue (ft)	283	323	136	171	100	116	184	287	32
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		1							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	5	6						0	
Queuing Penalty (veh)	21	25						0	

Intersection: 6: NB Ramps & SR-248, Interval #2

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	266	282	116	143	93	121	175	323	82
Average Queue (ft)	191	202	79	100	59	80	100	213	12
95th Queue (ft)	277	294	134	157	101	126	188	390	132
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	5	6					0	4	
Queuing Penalty (veh)	23	26					0	2	

Intersection: 6: NB Ramps & SR-248, Interval #3

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	312	340	167	152	89	109	161	266	22
Average Queue (ft)	206	223	86	99	53	73	99	190	4
95th Queue (ft)	316	368	189	160	93	114	180	280	27
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		2							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	8	9						0	
Queuing Penalty (veh)	33	38						0	

Intersection: 6: NB Ramps & SR-248, Interval #4

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	238	278	138	149	93	121	146	319	22
Average Queue (ft)	179	204	84	103	54	73	91	192	4
95th Queue (ft)	266	356	149	164	96	122	169	331	27
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		2							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	5	6						3	
Queuing Penalty (veh)	19	23						1	

Intersection: 6: NB Ramps & SR-248, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	320	402	196	184	113	136	199	373	105
Average Queue (ft)	189	204	81	102	55	75	95	193	6
95th Queue (ft)	288	339	155	163	98	120	181	328	70
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		1							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	6	7					0	2	
Queuing Penalty (veh)	24	28					0	1	

Network Summary

Network wide Queuing Penalty, Interval #1: 130
Network wide Queuing Penalty, Interval #2: 259
Network wide Queuing Penalty, Interval #3: 202
Network wide Queuing Penalty, Interval #4: 131
Network wide Queuing Penalty, All Intervals: 180

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SimTraffic LOS Report

Project: **PC - Raleigh Studios TIS**
Analysis Period: ***Future (2020) Plus Project***
Time Period: ***p.m. Peak Hour*** **Project #:** ***UT12-336***

Intersection: **SR-248 & Richardson Flat Rd**
Type: **Signalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	10	9	88	42.1	*D*
	T	1,486	1,491	100	23.5	*C*
	R	380	380	100	18.0	*B*
	Subtotal	1,876	1,880	100	22.5	*C*
SB	L	65	64	98	184.1	*F*
	T	1,164	1,152	99	12.5	*B*
	R	5	6	120	6.6	*A*
	Subtotal	1,234	1,222	99	21.5	*C*
EB	L	5	4	80	33.7	*C*
	R	5	6	120	11.0	*B*
	Subtotal	10	10	100	20.1	*B*
WB	L	260	271	104	58.6	*E*
	R	340	340	100	38.5	*D*
	Subtotal	600	611	102	47.4	*D*
Total		3,720	3,723	100	26.4	*C*

Intersection: **SR-248 & South Access**
Type: **Unsignalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	1,816	1,820	100	8.8	*A*
	R	16	18	111	8.3	*A*
	Subtotal	1,832	1,838	100	8.8	*A*
SB	L	5	6	120	38.6	*E*
	T	1,234	1,222	99	2.0	*A*
	Subtotal	1,239	1,228	99	2.2	*A*
WB	R	14	13	91	26.2	*D*
	Subtotal	***14***	***13***	***93***	***26.2***	***D***
Total		3,085	3,079	100	6.2	*A*

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SimTraffic LOS Report

Project: PC - Raleigh Studios TIS
Analysis Period: *Future (2020) Plus Project*
Time Period: *p.m. Peak Hour* **Project #:** *UT12-336*

Intersection: SR-248 & Round Valley Drive/Main Access
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	190	188	99	46.1	*D*
	T	1,595	1,598	100	16.2	*B*
	R	45	46	102	9.1	*A*
	Subtotal	1,830	1,832	100	19.1	*B*
SB	L	55	52	95	113.8	*F*
	T	736	742	101	11.3	*B*
	R	230	228	99	4.3	*A*
	Subtotal	1,021	1,022	100	15.0	*B*
EB	L	420	391	93	188.1	*F*
	R	340	328	96	41.2	*D*
	Subtotal	760	719	95	121.1	*F*
WB	L	164	160	98	94.2	*F*
	R	145	152	105	65.0	*E*
	Subtotal	309	312	101	80.0	*E*
Total		3,920	3,885	99	42.6	*D*

Intersection: SR-248 & North Truck Access
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	2,163	2,145	99	4.6	*A*
	Subtotal	2,163	2,145	99	4.6	*A*
SB	T	1,020	1,022	100	4.2	*A*
	Subtotal	1,020	1,022	100	4.2	*A*
WB	R	5	5	100	42.3	*E*
	Subtotal	***5***	***5***	***100***	***42.3***	***E***
Total		3,188	3,172	99	4.5	*A*

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SimTraffic LOS Report

Project: **PC - Raleigh Studios TIS**
Analysis Period: ***Future (2020) Plus Project***
Time Period: ***p.m. Peak Hour*** **Project #:** ***UT12-336***

Intersection: **SB Ramps & SR-248**
Type: **Signalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
SB	L	410	403	98	55.4	*E*
	R	456	462	101	13.3	*B*
	Subtotal	866	865	100	32.9	*C*
EB	T	1,399	1,383	99	16.0	*B*
	R	770	769	100	7.5	*A*
	Subtotal	2,169	2,152	99	13.0	*B*
WB	L	50	46	92	46.4	*D*
	T	564	560	99	8.7	*A*
	Subtotal	614	606	99	11.6	*B*
Total		3,650	3,623	99	17.5	*B*

Intersection: **NB Ramps & SR-248**
Type: **Signalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	339	338	100	44.3	*D*
	R	40	43	108	7.0	*A*
	Subtotal	379	381	101	40.1	*D*
EB	L	938	926	99	27.1	*C*
	T	866	852	98	11.2	*B*
	Subtotal	1,804	1,778	99	19.5	*B*
WB	T	275	267	97	33.5	*C*
	R	290	295	102	15.1	*B*
	Subtotal	565	562	99	23.8	*C*
Total		2,748	2,721	99	23.3	*C*

1: SR-248 & Richardson Flat Rd Performance by movement Interval #1 4:45

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	1.0	0.8	0.0	2.2	0.4	0.5	0.9	0.0	5.8
Total Del/Veh (s)	41.0	20.8	50.8	31.6	41.6	20.7	15.8	99.3	11.3	6.3	22.2
Speed Delay (hr)	0.0	0.0	0.9	0.7	0.0	1.7	0.2	0.5	0.9	0.0	4.9
Speed Del/Veh (s)	40.9	20.7	45.5	29.4	32.8	15.7	7.5	99.3	11.3	6.3	18.7
Vehicles Entered	1	1	67	82	2	366	93	15	275	1	903
Vehicles Exited	1	1	67	82	2	367	93	16	274	1	904
Hourly Exit Rate	4	4	268	328	8	1468	372	64	1096	4	3616
Input Volume	5	5	252	330	10	1443	369	63	1130	5	3612
% of Volume	80	80	106	99	80	102	101	102	97	80	100

1: SR-248 & Richardson Flat Rd Performance by movement Interval #2 5:00

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	1.2	1.1	0.0	3.4	0.7	1.0	1.2	0.0	8.7
Total Del/Veh (s)	19.8	10.0	56.4	40.3	38.7	29.4	22.8	178.0	13.3	12.4	29.9
Speed Delay (hr)	0.0	0.0	1.1	1.0	0.0	2.2	0.3	1.0	1.2	0.0	6.9
Speed Del/Veh (s)	19.7	9.9	50.4	37.1	26.7	19.2	9.9	178.0	13.3	12.4	23.7
Vehicles Entered	1	2	74	93	2	409	104	18	305	1	1009
Vehicles Exited	1	2	72	92	2	403	103	14	304	1	994
Hourly Exit Rate	4	8	288	368	8	1612	412	56	1216	4	3976
Input Volume	5	5	283	370	11	1615	413	71	1266	5	4044
% of Volume	80	160	102	99	73	100	100	79	96	80	98

1: SR-248 & Richardson Flat Rd Performance by movement Interval #3 5:15

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	1.3	1.0	0.0	2.1	0.4	1.1	1.1	0.0	7.0
Total Del/Veh (s)	52.1	10.9	65.5	40.3	41.8	20.6	15.8	179.0	12.5	8.3	26.4
Speed Delay (hr)	0.0	0.0	1.1	0.8	0.0	1.6	0.2	1.1	1.1	0.0	5.9
Speed Del/Veh (s)	52.0	10.7	56.0	34.3	34.8	15.1	7.6	179.0	12.5	8.3	22.1
Vehicles Entered	1	1	66	81	2	352	93	16	294	1	907
Vehicles Exited	1	1	67	81	2	358	94	18	294	1	917
Hourly Exit Rate	4	4	268	324	8	1432	376	72	1176	4	3668
Input Volume	5	5	252	330	10	1443	369	63	1130	5	3612
% of Volume	80	80	106	98	80	99	102	114	104	80	102

1: SR-248 & Richardson Flat Rd Performance by movement Interval #4 5:30

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.9	0.9	0.0	2.1	0.4	0.8	0.9	0.0	6.1
Total Del/Veh (s)	21.9	7.1	49.8	35.4	47.7	19.7	14.1	152.7	11.6	6.2	23.1
Speed Delay (hr)	0.0	0.0	0.8	0.8	0.0	1.6	0.2	0.8	0.9	0.0	5.3
Speed Del/Veh (s)	21.8	7.1	44.7	33.2	40.8	15.5	7.3	152.7	11.6	6.2	20.2
Vehicles Entered	1	2	64	83	2	370	88	15	278	2	905
Vehicles Exited	1	2	65	84	2	363	89	16	280	2	904
Hourly Exit Rate	4	8	260	336	8	1452	356	64	1120	8	3616
Input Volume	5	5	252	330	10	1443	369	63	1130	5	3612
% of Volume	80	160	103	102	80	101	96	102	99	160	100

1: SR-248 & Richardson Flat Rd Performance by movement Entire Run

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	4.5	3.7	0.1	9.9	1.9	3.5	4.0	0.0	27.6
Total Del/Veh (s)	33.7	11.0	58.6	38.5	42.1	23.5	18.0	184.1	12.5	6.6	26.4
Speed Delay (hr)	0.0	0.0	3.9	3.3	0.1	7.1	0.9	3.5	4.0	0.0	22.9
Speed Del/Veh (s)	33.6	10.9	51.8	35.0	33.0	16.9	8.5	184.1	12.5	6.6	21.9
Vehicles Entered	4	6	270	339	9	1497	379	64	1152	6	3726
Vehicles Exited	4	6	271	340	9	1491	380	64	1152	6	3723
Hourly Exit Rate	4	6	271	340	9	1491	380	64	1152	6	3723
Input Volume	5	5	260	340	10	1486	380	65	1164	5	3720
% of Volume	80	120	104	100	88	100	100	98	99	120	100

2: SR-248 & South Access Performance by movement Interval #1 4:45

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	1.0	0.0	0.0	0.2	1.2
Total Del/Veh (s)	21.7	7.9	8.1	42.7	1.9	5.7
Speed Delay (hr)	0.0	1.0	0.0	0.0	0.2	1.2
Speed Del/Veh (s)	21.6	7.9	8.1	42.7	1.9	5.7
Vehicles Entered	4	446	4	1	292	747
Vehicles Exited	4	447	4	1	291	747
Hourly Exit Rate	16	1788	16	4	1164	2988
Input Volume	14	1763	16	5	1198	2996
% of Volume	114	101	100	80	97	100

2: SR-248 & South Access Performance by movement Interval #2 5:00

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	1.4	0.0	0.0	0.2	1.7
Total Del/Veh (s)	52.2	10.0	8.5	48.6	2.0	7.1
Speed Delay (hr)	0.0	1.4	0.0	0.0	0.2	1.7
Speed Del/Veh (s)	52.1	10.0	8.5	48.6	2.0	7.1
Vehicles Entered	2	492	5	2	325	826
Vehicles Exited	2	490	5	2	325	824
Hourly Exit Rate	8	1960	20	8	1300	3296
Input Volume	15	1973	17	5	1342	3352
% of Volume	53	99	118	160	97	98

2: SR-248 & South Access Performance by movement Interval #3 5:15

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	1.1	0.0	0.0	0.2	1.3
Total Del/Veh (s)	18.1	8.5	9.5	30.2	2.0	6.0
Speed Delay (hr)	0.0	1.1	0.0	0.0	0.2	1.3
Speed Del/Veh (s)	18.1	8.5	9.5	30.2	2.0	6.0
Vehicles Entered	3	436	5	2	311	757
Vehicles Exited	3	437	5	2	311	758
Hourly Exit Rate	12	1748	20	8	1244	3032
Input Volume	14	1763	16	5	1198	2996
% of Volume	86	99	125	160	104	101

2: SR-248 & South Access Performance by movement Interval #4 5:30

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.0	1.0	0.0	0.0	0.2	1.2
Total Del/Veh (s)	23.6	7.5	6.9	31.5	1.9	5.5
Speed Delay (hr)	0.0	1.0	0.0	0.0	0.2	1.2
Speed Del/Veh (s)	23.5	7.5	6.9	31.5	1.9	5.4
Vehicles Entered	4	444	4	1	294	747
Vehicles Exited	4	446	4	1	295	750
Hourly Exit Rate	16	1784	16	4	1180	3000
Input Volume	14	1763	16	5	1198	2996
% of Volume	114	101	100	80	98	100

2: SR-248 & South Access Performance by movement Entire Run

Movement	WBR	NBT	NBR	SBL	SBT	All
Total Delay (hr)	0.1	4.5	0.0	0.1	0.7	5.4
Total Del/Veh (s)	26.2	8.8	8.3	38.6	2.0	6.2
Speed Delay (hr)	0.1	4.5	0.0	0.1	0.7	5.4
Speed Del/Veh (s)	26.1	8.8	8.3	38.6	2.0	6.2
Vehicles Entered	13	1819	18	6	1222	3078
Vehicles Exited	13	1820	18	6	1222	3079
Hourly Exit Rate	13	1820	18	6	1222	3079
Input Volume	14	1816	16	5	1234	3085
% of Volume	91	100	111	120	99	100

3: SR-248 & Round Valley Drive/Main Access Performance by movement Interval #1 4:45

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	2.0	0.4	0.9	0.6	0.5	1.4	0.0	0.3	0.5	0.1	6.8
Total Del/Veh (s)	71.8	19.4	77.7	56.6	36.6	12.9	6.5	80.0	9.8	4.0	25.1
Speed Delay (hr)	1.9	0.4	0.8	0.6	0.5	1.4	0.0	0.3	0.5	0.1	6.6
Speed Del/Veh (s)	66.2	17.7	73.4	55.9	36.6	12.9	6.5	80.0	9.8	4.0	24.1
Vehicles Entered	95	79	38	37	46	394	11	13	178	53	944
Vehicles Exited	94	77	39	38	44	390	11	12	178	53	936
Hourly Exit Rate	376	308	156	152	176	1560	44	48	712	212	3744
Input Volume	408	330	159	141	184	1549	44	53	715	223	3806
% of Volume	92	93	98	108	96	101	100	91	100	95	98

3: SR-248 & Round Valley Drive/Main Access Performance by movement Interval #2 5:00

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	4.5	1.0	1.4	0.8	0.8	2.4	0.0	0.4	0.6	0.1	12.3
Total Del/Veh (s)	138.1	37.1	111.9	70.2	54.0	20.0	11.7	99.1	11.4	4.7	40.4
Speed Delay (hr)	4.3	0.9	1.4	0.8	0.8	2.4	0.0	0.4	0.6	0.1	11.9
Speed Del/Veh (s)	131.9	34.3	107.4	69.5	54.0	20.0	11.7	99.1	11.4	4.7	39.2
Vehicles Entered	111	92	44	40	52	428	13	14	197	61	1052
Vehicles Exited	95	91	41	38	53	422	13	14	196	60	1023
Hourly Exit Rate	380	364	164	152	212	1688	52	56	784	240	4092
Input Volume	457	370	178	158	207	1733	49	60	799	250	4261
% of Volume	83	98	92	96	102	97	106	93	98	96	96

3: SR-248 & Round Valley Drive/Main Access Performance by movement Interval #3 5:15

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	7.3	1.2	1.1	0.7	0.6	1.9	0.0	0.5	0.6	0.1	14.1
Total Del/Veh (s)	206.4	50.1	96.2	59.9	48.4	17.2	10.2	119.1	11.4	4.4	49.2
Speed Delay (hr)	6.5	0.7	1.1	0.7	0.6	1.9	0.0	0.5	0.6	0.1	12.8
Speed Del/Veh (s)	183.0	29.9	91.9	59.2	48.4	17.2	10.2	119.1	11.4	4.4	44.4
Vehicles Entered	103	80	38	39	44	384	12	13	190	57	960
Vehicles Exited	101	82	41	39	45	394	12	14	190	58	976
Hourly Exit Rate	404	328	164	156	180	1576	48	56	760	232	3904
Input Volume	408	330	159	141	184	1549	44	53	715	223	3806
% of Volume	99	99	103	111	98	102	109	106	106	104	103

3: SR-248 & Round Valley Drive/Main Access Performance by movement Interval #4 5:30

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	7.9	1.1	0.8	0.6	0.5	1.4	0.0	0.4	0.6	0.1	13.5
Total Del/Veh (s)	225.2	50.6	66.0	55.8	35.7	12.7	6.1	109.9	11.2	3.9	48.1
Speed Delay (hr)	6.8	0.4	0.7	0.6	0.5	1.4	0.0	0.4	0.6	0.1	11.6
Speed Del/Veh (s)	194.1	19.0	61.7	55.2	35.7	12.7	6.0	109.9	11.2	3.9	41.4
Vehicles Entered	101	76	39	36	47	393	10	12	177	58	949
Vehicles Exited	101	78	39	38	46	392	11	12	179	57	953
Hourly Exit Rate	404	312	156	152	184	1568	44	48	716	228	3812
Input Volume	408	330	159	141	184	1549	44	53	715	223	3806
% of Volume	99	95	98	108	100	101	100	91	100	102	100

3: SR-248 & Round Valley Drive/Main Access Performance by movement Entire Run

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	21.8	3.8	4.2	2.8	2.4	7.2	0.1	1.7	2.3	0.3	46.7
Total Del/Veh (s)	188.1	41.2	94.2	65.0	46.1	16.2	9.1	113.8	11.3	4.3	42.6
Speed Delay (hr)	19.5	2.5	4.0	2.8	2.4	7.2	0.1	1.7	2.3	0.3	42.8
Speed Del/Veh (s)	168.4	27.0	89.6	64.3	46.1	16.2	9.1	113.8	11.3	4.3	39.1
Vehicles Entered	410	328	159	152	189	1599	46	52	741	229	3905
Vehicles Exited	391	328	160	152	188	1598	46	52	742	228	3885
Hourly Exit Rate	391	328	160	152	188	1598	46	52	742	228	3885
Input Volume	420	340	164	145	190	1595	45	55	736	230	3920
% of Volume	93	96	98	105	99	100	102	95	101	99	99

4: SR-248 & North Truck Access Performance by movement Interval #1 4:45

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.6	0.3	0.9
Total Del/Veh (s)	35.2	3.9	4.2	4.0
Speed Delay (hr)	0.0	0.6	0.3	0.9
Speed Del/Veh (s)	35.1	3.9	4.2	4.0
Vehicles Entered	1	523	242	766
Vehicles Exited	1	523	243	767
Hourly Exit Rate	4	2092	972	3068
Input Volume	5	2100	991	3096
% of Volume	80	100	98	99

4: SR-248 & North Truck Access Performance by movement Interval #2 5:00

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.9	0.3	1.2
Total Del/Veh (s)	30.1	5.5	4.2	5.1
Speed Delay (hr)	0.0	0.9	0.3	1.2
Speed Del/Veh (s)	29.9	5.4	4.2	5.1
Vehicles Entered	1	555	273	829
Vehicles Exited	1	554	272	827
Hourly Exit Rate	4	2216	1088	3308
Input Volume	5	2351	1109	3465
% of Volume	80	94	98	95

4: SR-248 & North Truck Access Performance by movement Interval #3 5:15

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.7	0.3	1.0
Total Del/Veh (s)	17.9	4.6	4.2	4.5
Speed Delay (hr)	0.0	0.7	0.3	1.0
Speed Del/Veh (s)	17.8	4.5	4.2	4.5
Vehicles Entered	2	534	259	795
Vehicles Exited	2	536	260	798
Hourly Exit Rate	8	2144	1040	3192
Input Volume	5	2100	991	3096
% of Volume	160	102	105	103

4: SR-248 & North Truck Access Performance by movement Interval #4 5:30

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.0	0.6	0.3	0.9
Total Del/Veh (s)	55.2	4.1	4.0	4.2
Speed Delay (hr)	0.0	0.6	0.3	0.9
Speed Del/Veh (s)	55.1	4.1	4.0	4.2
Vehicles Entered	1	531	247	779
Vehicles Exited	2	532	247	781
Hourly Exit Rate	8	2128	988	3124
Input Volume	5	2100	991	3096
% of Volume	160	101	100	101

4: SR-248 & North Truck Access Performance by movement Entire Run

Movement	WBR	NBT	SBT	All
Total Delay (hr)	0.1	2.7	1.2	4.0
Total Del/Veh (s)	42.3	4.6	4.2	4.5
Speed Delay (hr)	0.1	2.7	1.2	4.0
Speed Del/Veh (s)	42.2	4.5	4.2	4.5
Vehicles Entered	5	2143	1022	3170
Vehicles Exited	5	2145	1022	3172
Hourly Exit Rate	5	2145	1022	3172
Input Volume	5	2163	1020	3188
% of Volume	100	99	100	99

5: SB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.4	0.4	0.1	0.3	1.4	0.4	3.9
Total Del/Veh (s)	14.0	6.8	43.2	9.0	47.0	11.5	15.8
Speed Delay (hr)	1.4	0.4	0.1	0.3	1.2	0.1	3.5
Speed Del/Veh (s)	14.0	6.8	43.1	9.0	42.1	3.6	14.1
Vehicles Entered	340	185	12	127	96	114	874
Vehicles Exited	340	186	12	128	98	114	878
Hourly Exit Rate	1360	744	48	512	392	456	3512
Input Volume	1359	748	49	548	398	443	3545
% of Volume	100	99	98	93	98	103	99

5: SB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.9	0.5	0.1	0.4	2.0	0.5	5.4
Total Del/Veh (s)	19.1	8.1	45.3	8.7	62.0	14.9	20.2
Speed Delay (hr)	1.9	0.5	0.1	0.4	1.8	0.2	4.8
Speed Del/Veh (s)	19.1	8.1	45.3	8.7	54.7	4.7	18.0
Vehicles Entered	356	198	11	148	109	124	946
Vehicles Exited	354	197	11	148	105	124	939
Hourly Exit Rate	1416	788	44	592	420	496	3756
Input Volume	1520	837	54	613	446	496	3966
% of Volume	93	94	81	97	94	100	95

5: SB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.5	0.4	0.1	0.4	1.5	0.5	4.4
Total Del/Veh (s)	15.2	7.4	48.0	9.0	49.8	13.8	16.9
Speed Delay (hr)	1.5	0.4	0.1	0.4	1.4	0.1	3.9
Speed Del/Veh (s)	15.2	7.4	48.0	9.0	43.8	4.1	15.0
Vehicles Entered	347	192	10	144	99	115	907
Vehicles Exited	350	192	10	144	101	115	912
Hourly Exit Rate	1400	768	40	576	404	460	3648
Input Volume	1359	748	49	548	398	443	3545
% of Volume	103	103	82	105	102	104	103

5: SB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	1.4	0.4	0.2	0.3	1.4	0.4	4.0
Total Del/Veh (s)	14.4	7.1	45.5	7.6	46.6	11.4	15.6
Speed Delay (hr)	1.4	0.4	0.2	0.3	1.3	0.1	3.6
Speed Del/Veh (s)	14.4	7.1	45.5	7.6	42.2	3.7	14.2
Vehicles Entered	341	193	13	140	97	108	892
Vehicles Exited	339	194	13	139	99	108	892
Hourly Exit Rate	1356	776	52	556	396	432	3568
Input Volume	1359	748	49	548	398	443	3545
% of Volume	100	104	106	101	99	98	101

5: SB Ramps & SR-248 Performance by movement Entire Run

Movement	EBT	EBR	WBL	WBT	SBL	SBR	All
Total Delay (hr)	6.2	1.6	0.6	1.4	6.3	1.7	17.8
Total Del/Veh (s)	16.0	7.5	46.4	8.7	55.4	13.3	17.5
Speed Delay (hr)	6.2	1.6	0.6	1.4	5.6	0.5	15.9
Speed Del/Veh (s)	16.0	7.5	46.4	8.7	49.2	4.1	15.7
Vehicles Entered	1385	768	46	560	401	462	3622
Vehicles Exited	1383	769	46	560	403	462	3623
Hourly Exit Rate	1383	769	46	560	403	462	3623
Input Volume	1399	770	50	564	410	456	3650
% of Volume	99	100	92	99	98	101	99

6: NB Ramps & SR-248 Performance by movement Interval #1 4:45

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.6	0.6	0.6	0.3	0.9	0.0	4.0
Total Del/Veh (s)	24.8	9.9	30.9	14.2	39.2	6.7	21.3
Speed Delay (hr)	1.6	0.6	0.6	0.2	0.9	0.0	3.8
Speed Del/Veh (s)	24.8	9.9	29.7	9.0	38.7	2.7	20.4
Vehicles Entered	229	207	63	72	78	9	658
Vehicles Exited	229	207	62	72	76	9	655
Hourly Exit Rate	916	828	248	288	304	36	2620
Input Volume	911	841	267	282	329	39	2669
% of Volume	101	98	93	102	92	92	98

6: NB Ramps & SR-248 Performance by movement Interval #2 5:00

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.9	0.7	0.7	0.4	1.3	0.0	5.0
Total Del/Veh (s)	28.7	11.7	33.0	15.7	45.2	7.0	24.6
Speed Delay (hr)	1.9	0.7	0.6	0.2	1.3	0.0	4.8
Speed Del/Veh (s)	28.7	11.7	31.3	10.2	44.7	2.7	23.6
Vehicles Entered	238	219	69	79	93	12	710
Vehicles Exited	237	220	68	78	92	12	707
Hourly Exit Rate	948	880	272	312	368	48	2828
Input Volume	1020	941	299	315	368	43	2986
% of Volume	93	94	91	99	100	112	95

6: NB Ramps & SR-248 Performance by movement Interval #3 5:15

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.7	0.7	0.7	0.3	1.1	0.0	4.5
Total Del/Veh (s)	26.3	11.5	33.3	14.6	40.5	6.7	22.8
Speed Delay (hr)	1.7	0.7	0.7	0.2	1.0	0.0	4.3
Speed Del/Veh (s)	26.3	11.5	31.9	9.5	39.8	2.6	22.0
Vehicles Entered	234	215	68	72	84	13	686
Vehicles Exited	236	215	69	72	85	12	689
Hourly Exit Rate	944	860	276	288	340	48	2756
Input Volume	911	841	267	282	329	39	2669
% of Volume	104	102	103	102	103	123	103

6: NB Ramps & SR-248 Performance by movement Interval #4 5:30

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	1.7	0.7	0.6	0.3	1.0	0.0	4.3
Total Del/Veh (s)	27.1	11.1	29.6	14.0	39.4	7.1	22.4
Speed Delay (hr)	1.7	0.7	0.6	0.2	1.0	0.0	4.2
Speed Del/Veh (s)	27.1	11.1	28.4	9.0	39.0	2.9	21.7
Vehicles Entered	228	209	68	72	84	9	670
Vehicles Exited	225	210	68	72	85	9	669
Hourly Exit Rate	900	840	272	288	340	36	2676
Input Volume	911	841	267	282	329	39	2669
% of Volume	99	100	102	102	103	92	100

6: NB Ramps & SR-248 Performance by movement Entire Run

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Total Delay (hr)	7.0	2.6	2.5	1.2	4.2	0.1	17.8
Total Del/Veh (s)	27.1	11.2	33.5	15.1	44.3	7.0	23.3
Speed Delay (hr)	7.0	2.6	2.4	0.8	4.2	0.0	17.1
Speed Del/Veh (s)	27.1	11.2	32.0	9.7	43.8	2.8	22.5
Vehicles Entered	929	851	268	295	340	43	2726
Vehicles Exited	926	852	267	295	338	43	2721
Hourly Exit Rate	926	852	267	295	338	43	2721
Input Volume	938	866	275	290	339	40	2748
% of Volume	99	98	97	102	100	108	99

Total Network Performance By Interval

Interval Start	4:45	5:00	5:15	5:30	All
Total Delay (hr)	23.6	35.3	33.5	30.9	123.3
Total Del/Veh (s)	56.8	76.7	75.9	72.5	79.5
Speed Delay (hr)	21.9	32.4	30.3	27.8	112.3
Speed Del/Veh (s)	52.6	70.3	68.7	65.1	72.3
Vehicles Entered	1302	1464	1315	1307	5393
Vehicles Exited	1301	1395	1357	1321	5372
Hourly Exit Rate	5204	5580	5428	5284	5372
Input Volume	24953	27925	24953	24953	25696
% of Volume	21	20	22	21	21

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #1

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	28	254	260	23	299	298	85	118	197	221
Average Queue (ft)	7	176	158	6	171	179	40	74	122	149
95th Queue (ft)	28	290	302	22	297	291	99	137	200	233
Link Distance (ft)	329		560		1609	1609			1365	1365
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		9	6		5	3		0	1	
Queuing Penalty (veh)		30	14		0	12		0	1	

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #2

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	29	280	356	27	353	388	144	163	228	267
Average Queue (ft)	8	196	220	10	222	235	63	118	152	185
95th Queue (ft)	30	312	406	31	356	397	174	217	260	295
Link Distance (ft)	329		560		1609	1609			1365	1365
Upstream Blk Time (%)			1							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		13	12		9	7		12	1	
Queuing Penalty (veh)		48	33		1	28		79	1	

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #3

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	28	260	323	26	260	262	111	170	247	259
Average Queue (ft)	7	184	208	6	150	168	48	125	147	166
95th Queue (ft)	30	305	453	26	262	274	122	237	266	273
Link Distance (ft)	329		560		1609	1609			1365	1365
Upstream Blk Time (%)			4							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		15	7		4	3		15	1	
Queuing Penalty (veh)		48	17		0	11		87	1	

Intersection: 1: SR-248 & Richardson Flat Rd, Interval #4

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	26	260	316	27	254	298	58	155	193	231
Average Queue (ft)	8	174	182	8	152	178	37	108	120	152
95th Queue (ft)	29	301	344	27	270	305	61	221	199	245
Link Distance (ft)	329		560		1609	1609			1365	1365
Upstream Blk Time (%)			0							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		9	8		4	4		12	1	
Queuing Penalty (veh)		31	20		0	14		70	1	

Intersection: 1: SR-248 & Richardson Flat Rd, All Intervals

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	41	292	411	34	372	412	212	200	286	291
Average Queue (ft)	7	182	192	7	174	190	47	106	135	163
95th Queue (ft)	29	303	384	27	306	326	123	210	236	265
Link Distance (ft)	329		560		1609	1609			1365	1365
Upstream Blk Time (%)			1							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)		200		170			200	175		
Storage Blk Time (%)		12	8		5	4		10	1	
Queuing Penalty (veh)		39	21		1	16		59	1	

Intersection: 2: SR-248 & South Access, Interval #1

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	33	2	18
Average Queue (ft)	14	0	4
95th Queue (ft)	39	5	20
Link Distance (ft)	650	1365	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			50
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: SR-248 & South Access, Interval #2

Movement	WB	NB	NB	SB
Directions Served	R	T	TR	L
Maximum Queue (ft)	34	10	16	26
Average Queue (ft)	11	1	3	7
95th Queue (ft)	38	21	39	27
Link Distance (ft)	650	1365	1365	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				50
Storage Blk Time (%)				0
Queuing Penalty (veh)				3

Intersection: 2: SR-248 & South Access, Interval #3

Movement	WB	NB	NB	SB
Directions Served	R	T	TR	L
Maximum Queue (ft)	31	15	71	23
Average Queue (ft)	10	2	16	6
95th Queue (ft)	34	23	108	23
Link Distance (ft)	650	1365	1365	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				50
Storage Blk Time (%)				1
Queuing Penalty (veh)				7

Intersection: 2: SR-248 & South Access, Interval #4

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	36	2	16
Average Queue (ft)	16	0	3
95th Queue (ft)	43	4	17
Link Distance (ft)	650	1365	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			50
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: SR-248 & South Access, All Intervals

Movement	WB	NB	NB	SB
Directions Served	R	T	TR	L
Maximum Queue (ft)	45	25	77	32
Average Queue (ft)	13	1	5	5
95th Queue (ft)	39	15	55	22
Link Distance (ft)	650	1365	1365	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				50
Storage Blk Time (%)				0
Queuing Penalty (veh)				2

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #1

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	L	R	L	T	T	R	L
Maximum Queue (ft)	212	254	97	178	110	111	150	170	277	299	81	99
Average Queue (ft)	134	170	19	98	65	73	103	95	149	190	19	51
95th Queue (ft)	242	280	173	169	124	124	203	195	323	345	88	107
Link Distance (ft)			862	862			596		625	625		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	270	270			200	200		410			100	100
Storage Blk Time (%)	1	3							0	20	0	5
Queuing Penalty (veh)	0	0							0	9	0	17

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #1

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	147	157	74
Average Queue (ft)	79	89	41
95th Queue (ft)	151	162	74
Link Distance (ft)	486	486	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	3	3	0
Queuing Penalty (veh)	2	7	0

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #2

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	L	R	L	T	T	R	L
Maximum Queue (ft)	307	342	524	261	144	152	181	211	384	451	132	103
Average Queue (ft)	232	285	235	168	94	102	118	136	220	309	30	64
95th Queue (ft)	361	400	757	392	176	189	203	238	432	533	127	121
Link Distance (ft)			862	862			596		625	625		
Upstream Blk Time (%)			1						0	0		
Queuing Penalty (veh)			0						1	1		
Storage Bay Dist (ft)	270	270			200	200		410			100	100
Storage Blk Time (%)	9	32			2	4		0	0	28		10
Queuing Penalty (veh)	0	0			0	0		0	1	14		40

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #2

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	151	170	82
Average Queue (ft)	99	108	47
95th Queue (ft)	157	177	78
Link Distance (ft)	486	486	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	6	7	0
Queuing Penalty (veh)	4	17	0

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #3

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	L	R	L	T	T	R	L
Maximum Queue (ft)	295	343	626	327	128	138	177	210	366	464	118	115
Average Queue (ft)	259	329	516	158	78	88	111	116	195	261	24	74
95th Queue (ft)	385	424	1100	379	168	176	201	245	405	521	116	148
Link Distance (ft)			862	862			596		625	625		
Upstream Blk Time (%)			13							1		
Queuing Penalty (veh)			0							6		
Storage Bay Dist (ft)	270	270			200	200		410			100	100
Storage Blk Time (%)	16	61			3	5			1	24		16
Queuing Penalty (veh)	0	0			0	0			1	10		56

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #3

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	139	158	92
Average Queue (ft)	91	100	48
95th Queue (ft)	154	169	93
Link Distance (ft)	486	486	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	6	5	0
Queuing Penalty (veh)	3	12	2

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #4

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	L	R	L	T	T	R	L
Maximum Queue (ft)	303	346	676	326	95	97	163	171	233	310	80	101
Average Queue (ft)	257	329	593	129	56	64	104	96	123	189	19	62
95th Queue (ft)	392	428	1178	300	106	108	180	180	245	343	95	135
Link Distance (ft)			862	862			596		625	625		
Upstream Blk Time (%)			20									
Queuing Penalty (veh)			0									
Storage Bay Dist (ft)	270	270			200	200		410			100	100
Storage Blk Time (%)	14	63								19		16
Queuing Penalty (veh)	0	0								8		58

Intersection: 3: SR-248 & Round Valley Drive/Main Access, Interval #4

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	138	149	78
Average Queue (ft)	88	100	40
95th Queue (ft)	154	164	71
Link Distance (ft)	486	486	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	5	5	0
Queuing Penalty (veh)	3	12	0

Intersection: 3: SR-248 & Round Valley Drive/Main Access, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	L	R	L	T	T	R	L
Maximum Queue (ft)	315	356	743	422	158	164	213	268	462	516	183	131
Average Queue (ft)	221	278	341	138	73	82	109	111	172	237	23	63
95th Queue (ft)	371	428	963	327	149	156	198	219	365	457	107	130
Link Distance (ft)			862	862			596		625	625		
Upstream Blk Time (%)			8						0	0		
Queuing Penalty (veh)			0						0	2		
Storage Bay Dist (ft)	270	270			200	200		410			100	100
Storage Blk Time (%)	10	40			1	2		0	0	23	0	12
Queuing Penalty (veh)	0	0			0	0		0	1	10	0	43

Intersection: 3: SR-248 & Round Valley Drive/Main Access, All Intervals

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	180	194	106
Average Queue (ft)	89	99	44
95th Queue (ft)	155	169	80
Link Distance (ft)	486	486	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			110
Storage Blk Time (%)	5	5	0
Queuing Penalty (veh)	3	12	1

Intersection: 4: SR-248 & North Truck Access, Interval #1

Movement	WB	SB	SB
Directions Served	R	T	T
Maximum Queue (ft)	39	80	76
Average Queue (ft)	7	2	0
95th Queue (ft)	38	16	0
Link Distance (ft)	486	758	758
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: SR-248 & North Truck Access, Interval #2

Movement	WB	NB	NB	SB
Directions Served	R	T	T	T
Maximum Queue (ft)	48	49	50	8
Average Queue (ft)	12	13	16	2
95th Queue (ft)	51	130	155	16
Link Distance (ft)	486	486	486	758
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			3	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: SR-248 & North Truck Access, Interval #3

Movement	WB	SB	SB
Directions Served	R	T	T
Maximum Queue (ft)	46	3	3
Average Queue (ft)	13	0	0
95th Queue (ft)	55	7	0
Link Distance (ft)	486	758	758
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: SR-248 & North Truck Access, Interval #4

Movement	WB	SB	SB
Directions Served	R	T	T
Maximum Queue (ft)	49	77	74
Average Queue (ft)	15	11	11
95th Queue (ft)	63	162	150
Link Distance (ft)	486	758	758
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: SR-248 & North Truck Access, All Intervals

Movement	WB	NB	NB	SB	SB
Directions Served	R	T	T	T	T
Maximum Queue (ft)	80	49	50	165	150
Average Queue (ft)	12	3	4	4	3
95th Queue (ft)	52	63	74	80	73
Link Distance (ft)	486	486	486	758	758
Upstream Blk Time (%)			0	0	0
Queuing Penalty (veh)			1	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: SB Ramps & SR-248, Interval #1

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	315	287	68	110	152	359
Average Queue (ft)	178	177	38	58	79	242
95th Queue (ft)	321	303	77	119	153	377
Link Distance (ft)	758	758		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)		0				4
Queuing Penalty (veh)		0				17

Intersection: 5: SB Ramps & SR-248, Interval #2

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	355	346	57	68	110	139	455	57
Average Queue (ft)	229	237	24	36	63	85	315	32
95th Queue (ft)	453	469	215	70	117	153	544	250
Link Distance (ft)	758	758			585	585	1078	
Upstream Blk Time (%)	1	1						
Queuing Penalty (veh)	8	6						
Storage Bay Dist (ft)			470	200				310
Storage Blk Time (%)		2					15	
Queuing Penalty (veh)		13					74	

Intersection: 5: SB Ramps & SR-248, Interval #3

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	282	296	68	121	140	426
Average Queue (ft)	198	203	34	69	91	266
95th Queue (ft)	297	314	82	136	159	455
Link Distance (ft)	758	758		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						6
Queuing Penalty (veh)						28

Intersection: 5: SB Ramps & SR-248, Interval #4

Movement	EB	EB	WB	WB	WB	SB
Directions Served	T	T	L	T	T	LT
Maximum Queue (ft)	303	294	79	89	115	368
Average Queue (ft)	182	185	39	53	74	243
95th Queue (ft)	304	296	84	107	136	392
Link Distance (ft)	758	758		585	585	1078
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						4
Queuing Penalty (veh)						18

Intersection: 5: SB Ramps & SR-248, All Intervals

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	T	T	R	L	T	T	LT	R
Maximum Queue (ft)	434	391	57	99	138	166	496	57
Average Queue (ft)	197	200	6	37	61	82	266	8
95th Queue (ft)	355	359	103	79	121	151	452	119
Link Distance (ft)	758	758			585	585	1078	
Upstream Blk Time (%)	0	0						
Queuing Penalty (veh)	2	1						
Storage Bay Dist (ft)			470	200				310
Storage Blk Time (%)		0					7	
Queuing Penalty (veh)		3					34	

Intersection: 6: NB Ramps & SR-248, Interval #1

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	284	340	157	173	108	125	157	272	24
Average Queue (ft)	185	208	83	100	59	76	98	194	5
95th Queue (ft)	284	349	161	176	110	128	176	299	32
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	4	6						1	
Queuing Penalty (veh)	20	28						0	

Intersection: 6: NB Ramps & SR-248, Interval #2

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	299	362	171	196	107	129	180	353	26
Average Queue (ft)	214	239	103	130	64	81	109	242	3
95th Queue (ft)	323	405	182	210	112	137	196	412	23
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		1							
Queuing Penalty (veh)		5							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	8	9					0	5	
Queuing Penalty (veh)	42	47					0	2	

Intersection: 6: NB Ramps & SR-248, Interval #3

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	290	340	165	176	114	122	172	330	11
Average Queue (ft)	204	223	103	116	68	82	102	220	2
95th Queue (ft)	300	347	177	190	121	131	189	346	21
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		1							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	6	8						2	
Queuing Penalty (veh)	28	37						1	

Intersection: 6: NB Ramps & SR-248, Interval #4

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	286	353	155	172	100	114	151	292	22
Average Queue (ft)	195	220	96	116	58	75	93	209	3
95th Queue (ft)	300	374	166	185	106	121	171	299	24
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		1							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	6	8						1	
Queuing Penalty (veh)	29	35						0	

Intersection: 6: NB Ramps & SR-248, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	T	R	LT	R
Maximum Queue (ft)	322	492	199	206	132	154	209	390	51
Average Queue (ft)	200	222	96	116	62	78	100	216	3
95th Queue (ft)	303	371	173	192	113	130	184	346	25
Link Distance (ft)		585	585	585	1186	1186		963	
Upstream Blk Time (%)		0							
Queuing Penalty (veh)		2							
Storage Bay Dist (ft)	200						250		310
Storage Blk Time (%)	6	8					0	2	
Queuing Penalty (veh)	30	37					0	1	

Network Summary

Network wide Queuing Penalty, Interval #1: 158
Network wide Queuing Penalty, Interval #2: 470
Network wide Queuing Penalty, Interval #3: 356
Network wide Queuing Penalty, Interval #4: 301
Network wide Queuing Penalty, All Intervals: 321

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APPENDIX C

Site Plan

Building Legend

- 1A Hotel Lodging
- 1B Recording Studio
- 1C Stage Venue
- 1D Residence - omitted
- 1E Grand Ball Room
- 1F Atrium
- 2 Screening Rooms/Theater
- 3 Entertainment Venue
- 4 Mixed Use
- 5 Mixed Use
- 6 Sound Effects Stage
- 6A Office, Effects Stage
- 7 Sound Stages
- 7A Workshop
- 7B Production Support/ Offices
- 8 Workshop Office

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MASTER PLAN CONCEPT

April 2012

Raleigh Studios
Park City, Utah

Project #21868

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APPENDIX D

95th Percentile Queue Length Reports

SimTraffic Queueing Report

Project: PC - Raleigh Studios TIS

Time Period: p.m. Peak Hour

95th Percentile Queue Length (feet)

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Project #: UT12-336

Intersection	Time Period	EB			NB				SB				WB		
		L	R	T	L	LT	R	T	L	LT	R	T	L	LR	T
NB Ramps & SR-248	Existing 2012 Conditions	217	--	128	--	248	5	--	--	--	--	--	--	--	71
SB Ramps & SR-248	Existing 2012 Conditions	--	--	190	--	--	--	--	--	371	--	--	54	--	79
SR-248 & Richardson Flat Rd	Existing 2012 Conditions	--	--	--	--	--	--	--	18	--	--	--	--	39	--
SR-248 & Round Valley Drive	Existing 2012 Conditions	97	41	--	52	--	--	117	--	--	27	59	--	--	--

SimTraffic Queueing Report

Project: PC - Raleigh Studios TIS

Time Period: p.m. Peak Hour

95th Percentile Queue Length (feet)

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Project #: UT12-336

Intersection	Time Period	EB			NB				SB				WB			
		L	R	T	L	LT	R	T	L	LT	R	T	L	LR	R	T
NB Ramps & SR-248	Existing 2012 Plus Project	261	--	143	--	247	32	--	--	--	--	--	--	--	--	73
SB Ramps & SR-248	Existing 2012 Plus Project	--	--	228	--	--	--	--	--	405	58	--	56	--	--	82
SR-248 & North Truck Access	Existing 2012 Plus Project	--	--	--	--	--	--	--	--	--	--	5	--	--	41	--
SR-248 & Richardson Flat Rd	Existing 2012 Plus Project	--	--	--	--	--	--	--	18	--	--	--	--	38	--	--
SR-248 & Round Valley Drive/Main Acces	Existing 2012 Plus Project	100	51	--	51	--	45	204	80	--	27	86	88	--	101	--
SR-248 & South Access	Existing 2012 Plus Project	--	--	--	--	--	--	--	16	--	--	15	--	--	35	--

SimTraffic Queueing Report

Project: PC - Raleigh Studios TIS

Time Period: p.m. Peak Hour

95th Percentile Queue Length (feet)

HALES ENGINEERING
innovative transportation solutions

Project #: UT12-336

Intersection	Time Period	B4	EB				NB				SB					WB		
		T	L	LR	R	T	L	LT	R	T	L	LT	R	T	TR	L	T	TR
NB Ramps & SR-248	Future 2020 Conditions	--	393	--	--	586	--	526	112	--	--	--	--	--	--	--	138	--
SB Ramps & SR-248	Future 2020 Conditions	181	--	--	58	759	--	--	--	--	--	484	160	--	--	82	71	--
SR-248 & Richardson Flat Rd	Future 2020 Conditions	--	--	29	--	--	40	--	145	298	182	--	--	226	246	250	--	281
SR-248 & Round Valley Drive	Future 2020 Conditions	--	191	--	176	--	179	--	--	230	--	--	79	121	--	--	--	--

SimTraffic Queueing Report

Project: PC - Raleigh Studios TIS

Time Period: p.m. Peak Hour

95th Percentile Queue Length (feet)

HALES ENGINEERING
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Project #: UT12-336

Intersection	Time Period	EB				NB				SB					WB			
		L	LR	R	T	L	LT	R	T	L	LT	R	T	TR	L	R	T	TR
NB Ramps & SR-248	Future 2020 Conditions - Mitigated	314	--	--	159	--	328	70	--	--	--	--	--	--	--	181	109	--
SB Ramps & SR-248	Future 2020 Conditions - Mitigated	--	--	--	311	--	--	--	--	--	452	83	--	--	79	--	131	--
SR-248 & Richardson Flat Rd	Future 2020 Conditions - Mitigated	--	31	--	--	27	--	137	278	195	--	--	164	176	267	--	--	353
SR-248 & Round Valley Drive	Future 2020 Conditions - Mitigated	195	--	177	--	196	--	--	313	--	--	82	99	--	--	--	--	--

SimTraffic Queueing Report
Project: PC - Raleigh Studios TIS
Time Period: p.m. Peak Hour
95th Percentile Queue Length (feet)

HALES ENGINEERING
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Project #: UT12-336

Intersection	Time Period	EB				NB					SB					WB			
		L	LR	R	T	L	LT	R	T	TR	L	LT	R	T	TR	L	R	T	TR
NB Ramps & SR-248	Future (2020) Plus Project	337	--	--	183	--	346	25	--	--	--	--	--	--	--	--	184	122	--
SB Ramps & SR-248	Future (2020) Plus Project	--	--	103	357	--	--	--	--	--	--	452	119	--	--	79	--	136	--
SR-248 & North Truck Access	Future (2020) Plus Project	--	--	--	--	--	--	--	69	--	--	--	--	77	--	--	52	--	--
SR-248 & Richardson Flat Rd	Future (2020) Plus Project	--	29	--	--	27	--	123	316	--	210	--	--	236	265	303	--	--	384
SR-248 & Round Valley Drive/Main Acces	Future (2020) Plus Project	400	--	327	963	219	--	107	411	--	130	--	80	162	--	153	198	--	--
SR-248 & South Access	Future (2020) Plus Project	--	--	--	--	--	--	--	15	55	22	--	--	--	--	--	39	--	--